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CAMP BONNEVILLE
RESTORATION ADVISORY
BOARD MEETING

Court Reporter: Jaime S. Morrocco, RPR, CM

Date: April 9, 2003
Time: 7:00
Place: 213 N.E. 120th Avenue
Vancouver, Washington

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ERIC WAEHLING: Hello, everybody. Thank you very much for joining us once again. We're in another venue due to a schedule conflict with the PUD. I apologize for not identifying the scheduling conflict earlier. Karen did let us know which days that facility was available and wasn't available, but yet somehow I still managed to double book us. Anyway, thank you very much to Karen and Jennifer, they scrambled and found us an alternative location because the other fire house is also booked. I think the Boy Scouts or somebody had it. Thank you very much to the both of you. Let's start by going around the table. As always, RAB members please identify yourselves. Anybody else, you're welcome to identify yourself at your discretion. You don't have to by any means.

VALERIE LANE: Valerie Lane, RAB.

BRUCE OVERBAY: Bruce Overbay, RAB.

DON WASTLER: Don Wastler, Restoration Advisory Board, Camp Bonneville neighbor.

IAN RAY: Ian Ray, RAB.

JEROEN KOK: Jeroen Kok, Vancouver/Clark Parks and Recreation Department, Clark County representative.

CHUCK MASON: Chuck Mason, public.

KAREN KINGSTON: Karen Kingston, neighbor and community co-chair.

ERIC WAEHLING: Eric Waehling, Camp Bonneville BEC,

Army co-chair.
GREG JOHNSON: Greg Johnson, Department of Ecology.
BEN FORSON: Ben Forson, Department of Ecology.
SEAN SHELDRAKE: Sean Sheldrake, EPA.
CHRISTINE SUTHERLAND: Christine Sutherland, RAB.
BUD VAN CLEVE: Bud Van Cleve, Northeast Hazel Dell Neighborhood Association and RAB.
ERIN MIDDLEWOOD: Erin Middlewood with The Columbian.
DON STRICK: Don Strick with Clark County.
ED MARSH: Ed Marsh, FBI.
GAYNOR DAWSON: My name is Gaynor Dawson. I'll be speaking a little later on groundwater issues out there.
DAWN HOPPER: Dawn Hopper with Ecology.
JENNIFER WALTERS: Jennifer Walters, BRAC and Camp Bonneville administrative coordinator.
BRIAN VINCENT: Brian Vincent with Clark County.
ERIC WAEHLING: I think that's everybody. There's plenty of room at the table, anybody that wants to join us. Do you have anything?
KAREN KINGSTON: Do you have any updates?
ERIC WAEHLING: I do. I wanted to give you a chance to say anything you wanted to before we get started.
KAREN KINGSTON: I welcome all the visitors that we've got here today, Erin and whatnot. Go ahead and then

I'll hit on this stuff.
ERIC WAEHLING: Just a quick update under the Base Cleanup Team. There were two BCT meetings. We had one meeting to discuss some comments, clarify some comments on the Landfill 4 document, which I believe you all have copies of. In fact, I know you do because I got some questions from some folks. We had a meeting to walk through one question in particular, which you'll see when we update the document. There was a little bit of different interpretation of groundwater flow data. In my non-hydrogeologist -- it wasn't a radical interpretation, but a somewhat different interpretation of how to interpret that data. Unfortunately, Sean wasn't available for that meeting, but it was pretty quick and painless, wouldn't you say, Ben?
BEN FORSON: Yes.
JEROEN KOK: Can you tell us when that meeting was?
ERIC WAEHLING: It was last Wednesday.
BEN FORSON: Last Wednesday, yes.
JEROEN KOK: Thank you.
ERIC WAEHLING: Then this wasn't necessarily directly related to cleanup issues at Bonneville, but we also had a meeting with Ecology to discuss the order. As part of the order process, Ben can expand on this, Department of Ecology is required to have a public meeting associated with

that. We had a coordination meeting to discuss that. Those are all the meetings that I recall. As far as Landfill 4, Gaynor Dawson will be talking after our break, talking about the Landfill 4 -- excuse me, not Landfill 4.
BEN FORSON: Site plan.
ERIC WAEHLING: I misspoke. As far as Landfill 4 goes, at the last meeting, I told you I would be getting -- I'm getting myself confused. I apologize. As you know, the Army's intent is to remove the contents of Landfill 4 this field season, if possible. The scope of work is out for bid right now. We expect to have our bids back next week, and selection of a bidder a week following or soon thereafter. In the meantime, we're in a bit of a holding pattern until we see what the contractors come back with prices and proposals.
IAN RAY: When you say "remove the contents," does that mean dig it out?
ERIC WAEHLING: Dig it out to remove sources that potentially are adding to the groundwater issues that we have up there.
JEROEN KOK: Does that include removing contaminated soil?
ERIC WAEHLING: Yes.
JEROEN KOK: Or remediating it on-site?

ERIC WAEHLING: Either remediation or removal, bringing it to a conforming disposal facility. That's one of the areas of flexibility we allow the contractor so they can make the best economic choice as to whether it makes more sense to treat the soil on-site somehow or just to transport it someplace else. That's an engineering economic decision.
JEROEN KOK: Does that get reviewed by the regulators?
ERIC WAEHLING: Absolutely.
BEN FORSON: We will review it. If they decide to treat it on-site, we will assess the technology that they want to use. There are several end-point tests that has to be run to make sure that the cleanup has been completed and that long-term effectiveness has been established.
ERIC WAEHLING: I'm agreeing.
BEN FORSON: If they're going to treat it on-site, the idea is they're going to treat it and put it back, so we have to make sure.
ERIC WAEHLING: Right.
KAREN KINGSTON: Actually, it's directed to both of you. Is one of the Remedial Investigation and Feasibility Study treatments on-site burning the soil and doing a burn?
BEN FORSON: They haven't said anything about what they're going to do.
KAREN KINGSTON: Let me give a hypothetical then.

If it was going to be burned, would Ecology have in place a procedure that would notify all of the residents within a perimeter of Camp Bonneville that they would be burning the contaminated soil?
BEN FORSON: In fact, yes, they will prepare a work plan. That work plan, sure, they will have the chance.
KAREN KINGSTON: Just in the hypothetical?
BEN FORSON: Yes.
ERIC WAEHLING: There's a public comment process?
BEN FORSON: Yes. The public will get the chance to comment on that work plan.
KAREN KINGSTON: Good.
ERIC WAEHLING: As far as Landfill 4, that's the current status. Hopefully by the next meeting we'll have an idea of how much it's going to cost, who's going to do it. We'll see.
That is all that I have.
KAREN KINGSTON: The membership subcommittee met between meetings here. They voted a chairperson. It's Coleen Broad. I give kudos to Coleen for standing up and taking that on. They have decided, as a group, everybody attended, to have a membership drive. They've written up a notice that they wish to have publicized in the four newspapers, The Columbian, The Oregonian, the Camas - I can't remember the name of the paper out of Camas - and The Reflector.

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Would that be a problem for me to hand over a notice for a membership drive to Jennifer?
ERIC WAEHLING: Notice to have published?
KAREN KINGSTON: Yes.
ERIC WAEHLING: No, that shouldn't be a problem.
KAREN KINGSTON: I don't know, can one of you, either Ian or Christine, you're the only ones here, and Don, did one of you want to speak up and say anything about the membership meeting? You're waiting for the next one?
DON WASTLER: Actually, we attended and we agreed - it was actually Christine's idea, I thought it was a very good one - that we would have sort of like a probation period, we agreed something like until July. We were going to review applications to see how the people who were replying, to see how their attendance was, what kind of people they were.
CHRISTINE SUTHERLAND: I think we were going to have the drive until July 15th I think is the date we set. We have two applications now. We'll see what we get in from now until the 15th, then the committee will meet again and review. I think we have two positions open. I'm not really that sure. We'll pick two.
VALERIE LANE: I have a question. You're talking about a probation period. Are these people that are applying for RAB membership?
KAREN KINGSTON: I don't think they meant a

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probation period.
VALERIE LANE: I would hope not because anybody else can come in here and pick it up and do it without being on probation, checking attendance and stuff. I don't even think you should word it in there. I think you should delete it.
CHRISTINE SUTHERLAND: It's not in there. Maybe it was a bad word.
VALERIE LANE: It was spoken here, so obviously it was in there at one time. He mentioned it. I'd like to see it dropped. That's not the way people can apply for membership here.
CHRISTINE SUTHERLAND: What I've read, I haven't seen that word in there at all. It was just a discussion, is that right?
DON WASTLER: Yes.
KAREN KINGSTON: I don't think the committee had any intent of that.
DON WASTLER: The thing is now, it looks like we're going to be swarmed with a bunch of applications.
VALERIE LANE: I doubt it.
DON WASTLER: I doubt it, too.
VALERIE LANE: More power to you, but I doubt it.
JEROEN KOK: I have a question on that. Has the subcommittee established any criteria for determining who would become a member? Let's play on Don's optimistic view,

you do get swamped with applications. How are you going to go about the process of sorting out who makes it onto the RAB, especially if the goal is to get broad representation?
DON WASTLER: That was the very question I had.
BUD VAN CLEVE: Talent, bathing suit contest.
KAREN KINGSTON: Bud says a bathing suit contest will work. What do you think?
ERIC WAEHLING: Actually, I think it would be a good idea to nail those down before you broadcast it. That way you don't have to worry about giving the false impression of developing a criteria to be selective.
JEROEN KOK: After the fact.
ERIC WAEHLING: After the fact, yeah.
IAN RAY: That was discussed at the committee meeting, as a plan.
DON WASTLER: Something else that we discussed was some of the people who haven't been active members, possibly dropping them for other members that would be more active.
KAREN KINGSTON: They are requesting we do a vote. I think -- I hate to do this, but I believe Bob Frohs has not attended. Frank was going to come tonight. He wanted to bring -- because he says it's not fair to have done it before and not keep doing it.
CHRISTINE SUTHERLAND: He was going to talk about that tonight.

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KAREN KINGSTON: He wanted to bring that up.
ERIC WAEHLING: Maybe he'll come later.
KAREN KINGSTON: Should I ask for a vote? I'll ask for a vote.
ERIC WAEHLING: Now?
KAREN KINGSTON: Yes. We'll just get it over with. I would say it this way. As it stands, we have a member, Bob Frohs, who has been a very good member for many years, but he's missed the three-meeting limit, so he is up for removal. Those in favor of dropping his name from the membership list and still inviting him to be involved, would you please raise your hand?
JEROEN KOK: I have a question before we vote. Was he notified that he would be removed if he didn't attend?
KAREN KINGSTON: Everybody was.
JEROEN KOK: It goes back to that letter we sent out several months ago?
DON WASTLER: I told him yesterday.
KAREN KINGSTON: It's in the bylaws.
DON WASTLER: I told him yesterday. Even if he wanted to come tonight, I don't think he'd be here, because he was sick when I saw him yesterday. He closed up his shop and went home.
KAREN KINGSTON: They need to phone either Eric or myself. Having an excused absence, that's completely

understandable, completely.
DON WASTLER: I went to his shop and spoke to him yesterday about it. He agrees the same way that we do. I told him, I says, "Even if you're not going to be a member, you can still attend the meetings, be on the mailing list, be active." When I went up to his shop, he was sick, closing up the shop and leaving. I don't think he would be here tonight even if he wanted to be.
KAREN KINGSTON: Ian.
IAN RAY: A quorum exists here tonight.
KAREN KINGSTON: Thank you.
ERIC WAEHLING: One last question just to make sure we ask this. Is Bob the only person that has missed -- that is a member that has missed a series of meetings? I don't want to give the appearance that we're singling out any individual.
KAREN KINGSTON: The only other person I would have a question about would be Robert Torrens. Do you keep tally?
JENNIFER WALTERS: I can go back and look. He was there at the last meeting.
KAREN KINGSTON: He was. He's not in question.
DON WASTLER: In respect to what Eric just said, I was looking at this list that came with our agenda of the people that are on the board. I realize some of these people, it doesn't say they're all on the board, but says "and/or

community members." I see names here of people I don't even know. Janet Renfro.
KAREN KINGSTON: These people have either requested that they remain on the list or some of them are involved in homeowners or neighborhood associations, have requested the minutes so they can keep up via the minutes.
DON WASTLER: It says "and/or community members." It doesn't mean they're all RAB members.
ERIC WAEHLING: Correct.
KAREN KINGSTON: Anybody that calls me, I encourage them to use the minutes rather than hearsay about what happens at the meetings.
DON WASTLER: So do I.
KAREN KINGSTON: We have a vote. Can I see a show of hands?
ERIC WAEHLING: It needs to be seconded first.
KAREN KINGSTON: Thank you.
ERIC WAEHLING: Anyone second the motion?
KAREN KINGSTON: To take care of business, is there a second?
BUD VAN CLEVE: I'll second.
ERIC WAEHLING: Seconded by Bud Van Cleve. All in favor?
KAREN KINGSTON: EPA, you hold a seat on the RAB, you're a voting member. So does Department of Ecology.

You're a voting member. And Clark County is being represented by Jeroen. Just one of you can throw your vote in, sorry. Shall we do ayes again, we'll count?
BUD VAN CLEVE: Aye.
CHRISTINE SUTHERLAND: Aye.
BEN FORSON: Abstain.
GREG JOHNSON: Abstain.
ERIC WAEHLING: Aye.
KAREN KINGSTON: Aye.
JEROEN KOK: Aye.
IAN RAY: Aye.
DON WASTLER: Nay.
BRUCE OVERBAY: Nay.
VALERIE LANE: Nay.
ERIC WAEHLING: Did anyone keep a tally?
KAREN KINGSTON: The ayes have it. We're sorry about that, too.
Anyway, then the next one is when the County was here and did their presentation --
ERIC WAEHLING: Before we move on, I would like to state, just so it is documented, that if Bob wants to reapply, he's more than welcome to reapply to membership if he chooses.
KAREN KINGSTON: Absolutely. I would like to definitely state that, as well. He's absolutely welcome back in.

IAN RAY: Are we finished with Landfill 4?
ERIC WAEHLING: Well, are you talking about the questions that you sent out?
IAN RAY: Landfill 4 is on the agenda. We've already moved on to community updates.
ERIC WAEHLING: We had moved on. Actually, a number of your questions I think we're going to touch upon, the hydrogeological questions, in part of the discussions Gaynor is going to have. Then I was going to go back through, the ones we hadn't answered, I was going to answer them one by one.
IAN RAY: I do want to have each and every question addressed.
ERIC WAEHLING: I have them in writing for you.
IAN RAY: Thank you.
KAREN KINGSTON: Next order of business is I forgot at the last meeting, the predetermined questions and clarifications fielded by Clark County officials, to have those put into the March minutes. I need to include them into the April minutes. I have a copy of them for Jaime. They need to be entered into the minutes. They were -- it was supposed to be a verbal presentation. It's in writing. We'll at least have it in the minutes so it can be accessed by other people on line. I'll give this to Jaime.
(Clark County Q&A inserted at end of regular meeting minutes.)

KAREN KINGSTON: Also the last issue I have for community would be as far as the BCT goes, I believe there is a resounding effort among the community RAB that, according to the bylaws -- not the bylaws, excuse me, the '98 guidelines, the RAB is to be involved in an advisory role with the BCT prior to decisions and actions so that we may advise in a prior manner rather than to be updated after the fact. Can we somehow work or can you work with Ian, since he's the chair of that, so that the community portion of the RAB is advised at the same time Ecology is so that you can get -- so Ian can tally some input and be able to hand it in as part of the BCT work?

ERIC WAEHLING: Yeah. The only reason I'm hesitating, I'm trying to envision how we could do that. Certainly we should explore that and try to figure out how to do it. At the moment I'm not sure exactly how we could do that. But, yeah.

KAREN KINGSTON: Can I ask you then to work with Ian on that? I'll just leave it to the two of you to figure.

ERIC WAEHLING: I think it needs to be not only myself, but Ecology and EPA, as well, figure out a way to try to do that.

KAREN KINGSTON: That was it. Does anybody else have anything they want to add for community updating in this portion? Anything new?

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IAN RAY: I would have some questions. What happens to advisories? If a board member submits an advisory, what happens to them?
ERIC WAEHLING: To an advisory? I'm sorry, I don't understand.
IAN RAY: This is an advisory board.
ERIC WAEHLING: Okay.
IAN RAY: We're supposed to advise on certain issues.
ERIC WAEHLING: Right.
IAN RAY: Suppose I or somebody wrote out an advisory. What would happen to it?
ERIC WAEHLING: Physically?
IAN RAY: Yes.
KAREN KINGSTON: Yes.
IAN RAY: A letter.
ERIC WAEHLING: We would receive the letter and we'd take it under consideration. I know Ecology certainly takes it under consideration because they've responded to me telling me that certain members of the community have had concerns about this or that. I don't want to speak for Ben, but I know I've heard from them, their responsiveness to that. I guess I don't quite know how to answer that question. Forgive me.
IAN RAY: I think Sean has his hand up.

SEAN SHELDRAKE: I was just going to suggest that after the BCT considers the comment, whatever it's about, it be incorporated into the appropriate administrative record, whatever Remedial Investigation and Feasibility Study action unit it's for.

ERIC WAEHLING: Right, okay. I'm thinking it through. There's also a public comment component. There is a very formal process that when we get feedback or advisories, as you put it, as a part of that public comment component, those are documented and included in the administrative record. There's a formal response to that. Are you referring to that formal process?

IAN RAY: Yes.

ERIC WAEHLING: I'm sorry. I didn't understand. Yeah, that's incorporated in the document. And Ben could expound on what MOTCA requirements are for managing public comment.

BEN FORSON: Well, MOTCA requirements clearly state in the process of the cleanup, there are certain points where public comments --

KAREN KINGSTON: I need to interrupt. I'm sorry. It's an advisory board. We are not considered public comment; we're part of the process. I think what Ian is looking for is if he sends -- say you're doing an action, and he sends an advisory via the BCT portion for the community on the RAB,

that his advisory would be entered into your administrative record.
I do know by law if anybody sends you something that says they also want their letter or their communication to you included in the Army's administrative record, I know by law you must include it.
ERIC WAEHLING: I didn't know that, but I can believe it. I'm not disputing it.
KAREN KINGSTON: So is that what you're saying?
IAN RAY: Affirmative.
ERIC WAEHLING: Okay.
IAN RAY: I might add, this public participation guidance that we looked at --
BEN FORSON: Excuse me. Before you go on, let me make this clear.
The RAB duty is to advise the Army, okay? It doesn't include Ecology. So the issue that we're discussing, I think that is something that the Army should answer.
IAN RAY: That's probably correct. In fact, this document that we're working from right now, our participation guidance, says, "A RAB member provides advice on priorities among sites or projects." If someone were to provide advice, my question is, where does it go? What happens to it? Where does it end up? Does anyone look at it? Is there acknowledgment? Is there a response?

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ERIC WAEHLING: To be honest, Ian, this is the first time I've considered it. It will be incorporated as part of the administrative record associated with the document it's intended. We'll develop some sort of process to make sure that happens.
KAREN KINGSTON: Don.
DON WASTLER: We've talked about this at previous meetings, the previous meeting before. I believe it was Mr. Funk that brought the issue up that, as a board, before anything can be recommended, one person from the board can't recommend anything. They can as a citizen, but before it can be recommended, it has to be reviewed by the entire board and agreed upon.
ERIC WAEHLING: As a board action.
DON WASTLER: If I recall, I'm sure we had that discussion at the fire station before about that.
VALERIE LANE: Right.
ERIC WAEHLING: I think the point that Ian brings up, I'm assuming you mean as an individual of the community, not necessarily as a board member?
IAN RAY: Yes.
ERIC WAEHLING: Are you speaking --
IAN RAY: The advisory board doesn't act as a consensus-gathering body, it acts as an individual. That's in the bylaws.

ERIC WAEHLING: Ian is not saying his comment will represent the RAB as a body, but as his personal advice as a RAB member.
DON WASTLER: Ian has some pretty good stuff. I wouldn't mind reading it. I might sign it myself, when it comes to the water quality.
KAREN KINGSTON: Okay. That was it.
ERIC WAEHLING: All right.
KAREN KINGSTON: We can go to Greg. The next thing on the agenda --
I guess I should ask, was there anything else? I didn't mean to cut you off.
IAN RAY: Nothing else from me, no.
KAREN KINGSTON: We'll hear from Department of Ecology and Greg.
GREG JOHNSON: I guess the question of me was, "Can Greg Johnson provide an EoD report of the detonation of the latest 2.36 rockets on the west side of Lacamas Creek within the park reuse area and suggest what this might suggest as to unknown targets and how this applies to Washington Department of Ecology."
I brought one copy of it. The way it sounded to me was like one person wanted to see it.
ERIC WAEHLING: We can make additional copies.
GREG JOHNSON: Does anybody have any questions?

Would you like me to go through this with you?
ERIC WAEHLING: Real quick, give them an idea of what it says. It's a little cryptic.
GREG JOHNSON: This is a standard explosive ordnance incident report. It starts out with date. This one was 18 February. It goes into where the incident was located, which was Camp Bonneville, and who reported it, which was Eric Waehling. It has contact numbers. Then down here it has the personnel dispatched, who went to take care of the incident. The next page is the DODICs, which are the lot numbers for the explosives that were used, that were brought and used. On this one, there's M766, which is an ignitor for time fuse, and they used four of those. Then over here it has the net explosive weight, then the combined total explosive weight. That item was .00024.
The next one was M670, which is 24 foot of time fuse. Its net explosive weight was .00267. Then M131, which are non-electric blasting caps, they used four of those. Then M023, which is charge demolition, M112, C4, one and a quarter pound block of C4. They used four of those which came out to five pounds. So the total explosive weight was 5.08.
The next page is the description. They were M6 series, and lots were unknown because they didn't know. Then the very back page is the description of what happened. This is the last part of the report.

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This one is Mr. Waehling reported four to five 2.36 rockets near a stump on Camp Bonneville. The ordnance was identified and determined to be hazardous. The items were disposed of by detonation, which means they blew them in place.

CHRISTINE SUTHERLAND: I've already read that. I was curious why it said "four to five." Wouldn't you know if it was four or five?

ERIC WAEHLING: I reported -- I'm sorry. I didn't mean to cut you off.

If you look at the pictures, there's various pieces of metal sticking out of the tree. That's what I reported it as. They reported four to five individual rockets. There were railroad spikes, I didn't know what they were. I said that we had four or five things sticking out of the stump.

CHRISTINE SUTHERLAND: The other question is, I don't know why, but what was listed on there, how would someone go about blowing something like this up? I only heard one blast. It was quite large. I was kind of curious. Would you just load up the area and run?

GREG JOHNSON: Depends how many they blew. The way it works in EoD, it's not supposed to work this way, but the way it works, you get rid of what you take with you. If you take five pounds with you, you blow five pounds. The paperwork to take it back to the magazine and turn it in is

just unbelievable.
ERIC WAEHLING: What's the procedure they would use to set it off?
CHRISTINE SUTHERLAND: You have one rocket on the ground, one in some trees, or three. I don't really know. If they're sitting like this, that's why I was asking, do you load up this area (indicating)?
GREG JOHNSON: I haven't seen the picture.
ERIC WAEHLING: I can tell you what they told me when they were on-site. The pieces sticking out of the tree, they said one was the nose cone and the other was a railroad spike and other things not related to a rocket or a target.
GREG JOHNSON: On this one here, it's stuck in there, it's broken off. You can look in there and see there's no explosives. The fuse on these is in the back. But this one here, that would have been a concern there (indicating). You would have put the donor charge right next to the warhead and blown it.
CHRISTINE SUTHERLAND: On that picture he has in his hand, did they use five pounds on just that because the other ones weren't --
ERIC WAEHLING: Right. What the sergeant told me, and Greg is the expert, but what was reported to me is they thought what most likely happened is it hit the stump, broke off the nose cone, fell to the base. Because of the way it's

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sitting, they couldn't be a hundred percent certain that's what happened. Again, Greg, this is just what they're telling me.

GREG JOHNSON: Yeah.

ERIC WAEHLING: That's why they blew it in place, because they needed to be sure before they could move it. They decided to blow it.

CHRISTINE SUTHERLAND: Does the tree look exactly the same today?

ERIC WAEHLING: Not anymore.

BRUCE OVERBAY: Not after C4.

CHRISTINE SUTHERLAND: It was piled near the tree and it got both at once?

ERIC WAEHLING: Greg would have to tell you. They don't let me stay in the area. Greg could tell you exactly how they do it.

GREG JOHNSON: They don't say in here how they did it. I haven't talked to the guys. I just have this report. What we would have done, you would have just set it right next to the warhead on this one and blown it. They probably would have -- if that was the only shot they did, they probably put it all on there, I imagine. I wasn't there, so I don't know. All I have to go by is this (indicating). This is standard EoD report. That's all I can imagine that happened.

KAREN KINGSTON: Sean.
SEAN SHELDRAKE: I guess this question would be for Eric. In terms of the in-place detonation, was there a sweep done to make sure there wasn't, you know, unexploded frag created by the detonation?
ERIC WAEHLING: They went back and inspected the area before they would let me back in there. So, yeah, I guess the answer is yes.
SEAN SHELDRAKE: I guess residue would be my other question in terms of in-place detonations, how we're going to verify that the residue is not present or it's present in only a minuscule amount.
GREG JOHNSON: There's always going to be residue. This right here, the M023, four each charged demolition, M112, tagged in parens. They put these plastic pieces in the explosive now, ever since post 9/11, or even a long time before that.
ERIC WAEHLING: Oklahoma City.
GREG JOHNSON: You'll have evidence of where that explosive came from.
SEAN SHELDRAKE: I was just referring to any chemical residue. The obvious reason for in-place detonations is worker safety. The trade-off is then potentially explosive residue in that area. I was just wondering if we have some sort of analysis to show that residue is negligible.

ERIC WAEHLING: No, we don't. We know exactly where it was, but there's not been any soil sampling taken.
GREG JOHNSON: Any time there's a detonation, you have residue.
ED MARSH: When you detonate something like this, high order, just about all of it's gone, it's going to convert into basically oxygen and water and NCO2. The problem with residue is when you burn it, it doesn't detonate. Go high order, it burns. Just like you go out here and burn a log, you get charcoal. It doesn't necessarily convert chemically into carbon dioxide and the rest of it. When you high-order detonate something, you don't have nearly the residue you would if you burn it. That's the problem you're dealing with now, where all that stuff was burned up there rather than detonated.
SEAN SHELDRAKE: I would suggest in terms of EPA's take on in-place detonation, some sort of analytical board be done to see the residue left in place is negligible. It doesn't indicate high-order or low-order, sounds likes high-order, but some sort of analysis that verifies in-place detonations may be preferable for worker safety, but the trade-off is residue. Having some way to verify there's no residue would be EPA's suggestion.
ERIC WAEHLING: As we ramp up for doing large-scale cleanup for areas that are going to need that, we need to

consider that, if we need to do that, do a statistical representation to determine one way or the other. We know exactly where that location was. That could be one of the candidate sample points, I guess.
CHRISTINE SUTHERLAND: Is that something, since Ecology is leading, they would have to enforce if they had input to encourage that activity?
ERIC WAEHLING: It would be part of the work plan. Maybe I misunderstood.
CHRISTINE SUTHERLAND: I don't want it to stop there. I like his idea.
GREG JOHNSON: EoD is exempt from EPA guidelines on this for an emergency disposal.
ERIC WAEHLING: But Sean's point about the residuals is valid and has been raised before.
GREG JOHNSON: That is valid.
ERIC WAEHLING: We're going to be doing a lot more of this type of thing. As part of that, to make sure that you're not leaving residual contamination behind, it's probably prudent to take some soil samples afterwards. As we develop the plans to do this, we can incorporate that. Whether we're going to have to sample each and every single hole, or whether we sample 50 of them, and if all 50 of them are clean, we say the process is clean, that remains to be seen.

But Sean's point is well-taken. We'll have to do something. As I said, we know exactly where it was, and we can go back and do confirmational sampling as part of that overall process.

BEN FORSON: Basically, I mean, the detonation area there has to be assessed in the sense of you look at the amount of explosives that was discharged. You have to assess, any time you explode, set an amount, what will be the residual, if there's any. Once you know the residual that you expect, that would determine whether it calls for analysis sampling of the area or not. Just the fact that something has been detonated doesn't call for rushing there and taking soil samples. It has to be assessed first.

GREG JOHNSON: Then, too, you have to remember we're working at an impact area. This base had detonations everywhere. If we start looking at sampling every place there was a detonation, I mean, you'd be sampling the whole place, the whole base.

KAREN KINGSTON: I have a question.

ERIC WAEHLING: Yes.

KAREN KINGSTON: In this case, this was an emergency detonation, so it falls outside of some of the guidelines and whatnot. But is it a typical practice? I live a thousand feet from the west gate. Even though this was on the west side of Lacamas Creek, in the reuse area, it shook my house.

00030

Is it typical to use five pounds of C4? Then when you amplify that with the fact that you're blowing up something that's going to blow up, too, was it typical to blow all that together in one great big explosion like that?

GREG JOHNSON: That would have been a call that the team leader made that day. Probably it could have been a guy who didn't have a lot of experience. The other thing was, what was the cloud cover that day?

ERIC WAEHLING: It was very low.

DON WASTLER: It shook my place and I'm a mile from the gate.

GREG JOHNSON: If you have low cloud cover.

KAREN KINGSTON: There was an inversion.

GREG JOHNSON: One block of C4 could rock your world, if it's low enough.

IAN RAY: What was the Richter?

DON WASTLER: That's not really a joke. I'm a mile from the gate. It wasn't anything serious, but I heard it and definitely felt it.

GREG JOHNSON: Maybe what this kid should have done, the sergeant in charge, whatever, maybe he should have done a couple different shots instead of all at once. Like I said, you don't normally -- you use what you take, that's the rule of thumb.

KAREN KINGSTON: Does the Army have anything in

place to say to notify people ahead of time?
ERIC WAEHLING: As I said, when we're going to do this as a regular operation, not as an emergency, as part of our clearance activities that we're going to do to clean up the park, we'll have not only notification procedures, we may have guidelines that if you have certain weather conditions, because of noise impacts, things like that, that will certainly be part of it. That will be part of the work plans that everybody has a chance to comment on. They'll be out for public review, as well as the RAB.
BEN FORSON: The level of explosion in the future, when there is an emergency blast, whatever it is, maybe the citizens should be informed. I mean, even if it's a phone call, calling around.
KAREN KINGSTON: Something that big.
GREG JOHNSON: What they can do, which would probably be a good idea, when we start working, try and have either one time during the day that they do demo.
ERIC WAEHLING: Same time every day.
GREG JOHNSON: Or maybe one day out of the week at one certain time, then everybody knows.
KAREN KINGSTON: The neighbors are real used to that. They're used to having military actions go on for, say, a week, you know, during a particular time. That would work I think real well with the neighborhood. I got phone calls.

Most of the people that called me were unnerved thinking, with the war situation as it is right now, with something that huge, they thought they needed to get in the car and leave. It did cause some distress on some of them, the older folks.

ERIC WAEHLING: As loud as it was, the hole is not that big.

KAREN KINGSTON: Really?

ERIC WAEHLING: It surprised the heck out of me. I had never heard anything like that.

GREG JOHNSON: Five pounds is not a lot of explosive. That's about what is in a 105.

DON WASTLER: I grew up listening to them shoot artillery. I remember lots of loud booms, but I don't remember an impact like that. It wasn't serious, but it shook the building.

ERIC WAEHLING: I think a lot of it was because of the weather conditions.

KAREN KINGSTON: I would judge it worse than a Howitzer. I was out there when they were doing those. I would say it was definitely worse than a Howitzer that would have been parked out there by the gate up on that free stand or something, what do you call that?

GREG JOHNSON: It gets reflected off the cloud. It projects rather than taking it up.

ERIC WAEHLING: The noise.

BRUCE OVERBAY: Reverberates out.
GREG JOHNSON: Noise and the blast.
KAREN KINGSTON: It was on the west side and in the reuse?
GREG JOHNSON: Yes.
KAREN KINGSTON: Where does Ecology stand on the fact that there was that much there, no target? County feels that's a no target area. Where does Ecology stand with that?
ERIC WAEHLING: It is a target now.
KAREN KINGSTON: It's a target now?
ERIC WAEHLING: It was an unknown range. When you find something, it becomes a target. Its status changes.
GREG JOHNSON: It was a stump that some guys were shooting rockets at is what it comes down to.
KAREN KINGSTON: So in the Reuse Plan, that part of the Reuse Plan was based on there was no known targets in that area. Now that there's a known target in that area, what does that do to the Reuse Plan?
GREG JOHNSON: Well, the way Ecology looks at the entire reuse area is it is a target area. There are target areas. That entire area needs to be investigated.
KAREN KINGSTON: Does the County know this?
ERIC WAEHLING: I don't know if the County knows, but I can say the Army's position is, because that item was found in that area, because of its location, but regardless of

where it was found, clearance is required in that area before it can be used.
KAREN KINGSTON: I think we had one other one. Department of Ecology guidelines and procedures for handling a BRAC site when the site is changed. Did you see number one in there? The Washington Department of Ecology guidelines and procedures for handling a BRAC site cleanup when the Reuse Plan for that site is changed or denied.
BEN FORSON: Well, a BRAC site is just like any other MOTCA site, according to Department of Ecology. The extent of cleanups or investigations are tailored to meet safety requirements, taking into account the land use determination for the area, which means the end use of the land, the future use plan, actually determines the extent of the investigation and remediation that will take place there. Any time there is a change, let's say in Camp Bonneville, in this situation, the selection of the cleanup actions is going to depend upon the land use plan. The land use limitation will also be specified in the institutional controls that will be part of the remedy selection. So if it's changing, if the land use plan is changing, then the Remedial Investigation and Feasibility Study response actions has to also be modified to be commensurate with the changes.
KAREN KINGSTON: So then in this case, the LRA was

determined -- the reuse of that area I believe was overnight camping.
ERIC WAEHLING: For which area in particular?
KAREN KINGSTON: This area.
ERIC WAEHLING: Where it was found? Right here on the hillside. I don't think there was any particular activity planned for that spot right there. It's up on the wooded hillside. I could make a bigger dot. It's approximately this area here (indicating).
KAREN KINGSTON: That's in hiking trails, equestrian trails, bike trails, picnic areas, amphitheater, restrooms, tent camping, RV camping, watch person residences and archery range.
JEROEN KOK: Those are the full list of regional park elements, based on that site plan, which is not admittedly very detailed. I believe there are just some trails going through that general vicinity.
KAREN KINGSTON: I would say it's near new trails and the watch person's residence, according to the X that Eric put.
ERIC WAEHLING: Right. But maybe it would be -- I'm thinking for the benefit of everybody, maybe it would be better if we could project.
KAREN KINGSTON: I'm not projecting anything about the reuse. What I'm asking is, the Department of Ecology, now

that the LRA based their use on the fact that it was a non-target area, so therefore they all sat and came up with hiking trails and equestrian trails and whatnot. Now that there is a known target in that area, it changes that reuse for that particular area, is that right? What does Ecology do now?
BEN FORSON: Have they changed the reuse for the area?
KAREN KINGSTON: No, Clark County hasn't, as far as I know.
JEROEN KOK: No.
BEN FORSON: And we haven't selected cleanup response actions yet. What I'm saying is the cleanup actions will be selected to protect the health and safety of individuals based on the proposed land use.
ERIC WAEHLING: Could I try taking another shot at rephrasing your question.
KAREN KINGSTON: Okay.
BEN FORSON: Let me give you an example.
KAREN KINGSTON: Certainly.
BEN FORSON: If an area is going to be used for let's say a day-care.
KAREN KINGSTON: Let's say an amphitheater.
ERIC WAEHLING: Actually, I think her question is simple, if I paraphrase it correctly.

This isn't the case, but hypothetically let's say they located the tent camping right on top of where this rocket was found, would the Department of Ecology have Clark County change the Reuse Plan to accommodate that new bullet of information? Is that what you're asking?

KAREN KINGSTON: There you go.

ERIC WAEHLING: Would you make them move the campground?

BEN FORSON: Not necessarily. But you will select -- it can go either way. Either impress on the County to change the land use plan or select a Remedial Investigation and Feasibility Study response that will be protective, considering the land use that they proposed for that area.

GREG JOHNSON: They can move it or dig it up, remove the ordnance.

BEN FORSON: You can either move what you're going to do there or, if you insist you want to put it there, dig the area.

KAREN KINGSTON: If a change does happen in the reuse, say you tell Clark County, "You're going to have to move your amphitheater because it's in a known target area now," does that change -- do you have a procedure in place, and does that change the way you're handling Clark County and their Reuse Plan? Does that change anything from Ecology's standpoint?

BEN FORSON: No. What I'm saying is, they will have the option because the selection of the response action depends on the land use. If you know that this area has ordnances, but they want to put a setting, let's say a baseball court there, then they'll have to select a cleanup action, that even though they're having a baseball place there, it will still be protected.

DON WASTLER: She's asking you, even though they found that there, and Clark County is not going to change the Reuse Plan, that you're going to take extra measures to make sure that area is safe.

BEN FORSON: That's what I'm saying. You pick the cleanup action based on the land use.

ERIC WAEHLING: Right. So Ecology won't tell Clark County they have to move it, but they're going to say, "If you keep it there, you're going to have to do X, Y and Z."

DON WASTLER: They're going to stay in accordance with the Reuse Plan, but because that's found, they'll take extra measures to make sure nothing else is found there.

ERIC WAEHLING: Make an economic decision, safety decision based on that.

BEN FORSON: Sometimes you look at the response action you have to take to maintain the land use. It makes economic sense to just move it somewhere else sometimes. That choice will be theirs.

KAREN KINGSTON: Christine.
CHRISTINE SUTHERLAND: If we find as these remediation activities start to take place what I call surprises, more and more are found, more targets are found, now we're looking at the west side of the creek as an area that needs intensive remediation, like a lot of sites, sieve and dig --
SEAN SHELDRAKE: Dig and sieve.
CHRISTINE SUTHERLAND: -- that's a very expensive procedure. If you find that you have to do so many of those types of procedures in order to keep up with Clark County's reuse, is there a procedure or is there a call that someone can make that this park is not an economical idea for the taxpayers to clean up to those standards, because of all the surprises you will start to find, potentially find? Do you understand what I'm saying?
BEN FORSON: If they have the money to do that?
CHRISTINE SUTHERLAND: Then just keep on rolling?
ERIC WAEHLING: Right. But the Army would be the one to make that call.
GREG JOHNSON: You're asking the wrong people. We can try and enforce them to do something. If they don't do it, you know, we have to either go after someone else or they have to make that determination.
CHRISTINE SUTHERLAND: Say that rocket, certain

aspects as the remediation takes place, you find lots of what I call surprises, a lot on the west side, you will enforce that it has to be cleaned up in order to secure our safety, and if it reaches a cost, then the Army --
BEN FORSON: Then the Army might say, "If this is how much it's going to cost."
CHRISTINE SUTHERLAND: But the County will be new owners soon, right?
ERIC WAEHLING: Yes.
CHRISTINE SUTHERLAND: I'm concerned about how is that going to affect the --
ERIC WAEHLING: As we've talked about before, I'm sure we're going to talk about a lot in the future, we're familiar with this Environmental Cooperative Services Agreement, basically the money that the Army will give them to continue on with the cleanup.
One of the things that the Army will require of the County, to answer that very scenario that you brought up, the County will be required to purchase insurance to cover those cost overruns. If they keep coming up with surprises, as you put it, that exceed the contingencies that we build into the ESCA, because you make your estimate, then you plus it up a little bit on a percentage basis to cover unexpected, and then if you exceed that, then the insurance will kick in. If you bankrupt your insurance company, ultimately the Army is still

there. If they discover Chernoble out there, another Chernoble, ultimately the Army is still on the hook. But between then and now, you have the ESCA insurance and then back to the Army.
CHRISTINE SUTHERLAND: Can I ask you a question? We've got an amount to clean it up that will be transferred to the County. If that goes, we get into a problem, we've got insurance?
ERIC WAEHLING: Correct.
CHRISTINE SUTHERLAND: Say this scenario, it has a problem, we have to go back to the Army. This whole process, is that going to cost the County, not the first chunk, is that going to cost the County any money to go back and go back to here (indicating)?
ERIC WAEHLING: The Army pays for the insurance. We even buy the insurance for the County. The County doesn't pay for that.
CHRISTINE SUTHERLAND: There's not a legal battle to get from the first lump sum all the way back to Point A, to where we are today?
ERIC WAEHLING: To be honest, I'm not a lawyer.
CHRISTINE SUTHERLAND: Are you aware of anything?
ERIC WAEHLING: I can say I suspect there may be a deductible, as with most insurance policies. How much that deductible is, I don't know.

But the details of the legal process to get back -- the whole idea is for it not to come back to the Army. We're going to protect ourselves by making sure the insurance, we are comfortable, is going to be adequate to cover any contingency. It's only under dire and most extreme circumstances that the property will revert back to Army or Federal ownership.

CHRISTINE SUTHERLAND: Do you know of a case that it's reverted back?

ERIC WAEHLING: I don't know of any. I will be the first to tell you, I don't have a lot of experience with early transfers. This is my first one, too.

CHRISTINE SUTHERLAND: Do you work with anyone in the Army that has done it?

ERIC WAEHLING: Yes. I can ask. But I'm unaware of any property. We call that a reversionary clause, the people that receive the property, they can no longer financially manage it.

It's in our interest, too, that Clark County is able to manage the property because the Army's liability -- we're still liable. If something goes wrong, the Army is still liable. It's in our best interest to make sure that Clark County has the capability of operating this property. We call that a reversionary clause, that it will revert back to Federal ownership. I'm not aware of that

occurring, but I can't promise you that hasn't happened. I don't know of any.
IAN RAY: There was a question that was never answered at the end of the February RAB about a road map to all of these events you're talking about. The RAB could really benefit, the community, everyone would benefit if we had a road map. We would know the answers to these questions about events that haven't occurred.
ERIC WAEHLING: Dawn can answer that.
KAREN KINGSTON: We'll get to that, too. I want to ask you, too, say Christine's hypothetical scenario goes down, bankrupts the insurance company, the Army's ultimately responsible. I think precedent is set everywhere that there is legal that gets involved to work out a scenario with the Army to add more money to the pot.
Does the Army reimburse Clark County for all its legal fees on top of buying insurance, on top of doing the remediation and the removals? Do you take care of all of Clark County's legal fees?
ERIC WAEHLING: If it reverts back to Federal ownership?
KAREN KINGSTON: If the insurance is bankrupt, Clark County has to come back to you for more money into the pot because they found Chernoble, do you reimburse Clark County for all their legal fees?

ERIC WAEHLING: I don't know. I can't answer that. I can't tell you.
KAREN KINGSTON: That's a question that probably I would think should be brought up at a community forum. That's my pocketbook, everybody's pocketbook, as to who pays the legal fees for all of this. We'll put that off.
BUD VAN CLEVE: To simplify it, the way I understand it, there will never be a time that the Army is not financially responsible, is that correct?
ERIC WAEHLING: Ultimately.
BEN FORSON: According to MOTCA, yes.
ERIC WAEHLING: And CERCLA. The Army isn't refuting that, right.
KAREN KINGSTON: The question was, who pays the legal fees to make that happen? I know you can't answer it, because Eric can't.
BUD VAN CLEVE: I don't know. Since they are paying for the insurance, I would assume that they're going to carry that burden.
ERIC WAEHLING: You know, I think we're actually getting ourselves way down a path that we don't necessarily have to go down. But ultimately it would be an enforcement issue. It would be these fellows to my right here that would be knocking on the Army's doors.
BUD VAN CLEVE: They got their own attorneys anyway,

qualified or not qualified.
KAREN KINGSTON: What did you just say?
BUD VAN CLEVE: Clark County has their bank of attorneys, whether they be qualified for that kind of work or not.
KAREN KINGSTON: I completely agree. I think they're very qualified. The only thing is it comes out of your pocket and my pocket to pay their wages. It would be ultimately something to know as far as who takes care of the legal fees for all of this.
Christine, did you have a last question? Anybody else?
GREG JOHNSON: I'll add something. I think the best way to resolve this issue is to do the best possible cleanup. If we do the best possible cleanup and do it right the first time, we probably won't have these problems. That's the point where we're focused right now, where we're going to be focused for the next couple months.
KAREN KINGSTON: Let's take a break and then go on to hydrology.
(Pause in proceedings.)
ERIC WAEHLING: I'd like to introduce you to Gaynor Dawson. Gaynor is helping me. Gaynor is with a company called Project Performance Corporation. Gaynor is helping the Army, he's helping me, work our way through the issues at Camp

Bonneville.
Gaynor has played a significant role in the designing of some of the groundwater studies that we've done. In the past, people have asked me to ask Gaynor to join us so we could begin to talk about the thought process that went into how we designed where we located these wells that we installed last November, so I asked him to join us here today. I think what Gaynor and I were envisioning is just as much a question and answer, exchange of ideas and information. I welcome Gaynor. Thank you.
GAYNOR DAWSON: Let me maybe do this in three parts. I know y'all have registered some questions. What I'd like to do is first kind of start with a brief presentation of kind of how we envision what's going on out here, why we approached things the way we did, what we think they're telling us, albeit far from complete at this point in time, address some of the questions that I'm aware of that y'all have had, then open it up for further clarifications.
In essence, when we do a groundwater investigation, we have two options: we can go inside-out or outside-in. What do I mean by that? Well, first of all, if you look at issues of chemical contamination, typically what we say is we're going to be concerned if there's a risk. There can only be a risk if we have a source, a release mechanism, transport pathway, and an exposure mode and finally a receptor.

What's my example of that? Some chemicals in the soil that dissolved in the rain subsequently infiltrate down to the groundwater, people drink the water, and that person at the well is a receptor. I have to have a complete path to get risk as registered by that individual.

So if I'm going for an inside-out investigation of groundwater, I identify my probable source areas and I put some wells in there. If I see contaminated water, I start stepping out until I can find the edge of the plume, define how extensive it is.

Now, perfectly good approach. When you do that approach, if you haven't any idea how big that plume is, first of all when you put a well in, you have to develop it, let it sit for a month or two before you can get a reasonable sample, turnaround with lab time. What can happen is each of these step-outs can take two, three, four months. If it's a big plume, and if you don't know quite which direction the groundwater is flowing, you might find yourself doing this, then this (indicating). It can take quite a while to delineate a plume, if it's a large plume.

The outside-in option is to say, if I have a pretty good idea where things may be going, and I want to be sure that I'm keeping things safe at the moment, I can go out here to some line I've drawn in the sand where I want to be sure I'm protective, set that in place, and then if I see evidence

that there's a problem, I can either go back and find my sources or I can use the weight of evidence approach which takes other types of justifications that are ongoing, like soil analysis and so forth, to put the picture together and decide where back in that line I may have a problem. Like I said, it's choice.

In this case, we chose to go outside-in. The reason was really quite simple. If you look at Camp Bonneville, in many respects, you have a bowl with Lacamas Creek flowing out of the bowl. In most systems, conceptual model for this would be that the groundwater will flow just like your surface water flows. Your ground watershed is similar to your surface watershed.

In other words, if you look at this in profile, you would expect that you have bedrock highs that form those ridges. I'm sure you guys have climbed all those ridges and seen exposed rock. You have alluvium that's coming from the weathering of the bedrock overtime, so your water falls, comes into the soil, starts down that mountain and comes this way, because even underground water flows downhill. Basic premise.

So our thought, our initial conceptual model, means this bowl means the groundwater in the interior is likely to be flowing out here where Lacamas Creek flows out. And in constructing our wells and so forth, we'll test that hypothesis, we'll see if we were right.

In this case what I felt would be appropriate is we know we have a plume up in here at Landfill 4. Based on all the data we've got, it's not real extensive, we haven't defined it absolutely, but we're getting pretty close. We have two other major source areas that may be of concern: Demo Area 2, Demo Area 3. Then we have some broader, more diffuse areas: the central impact area and the various small arms ranges.

I'll tell you, experience around the country is we rarely find groundwater problems with small arms ranges. Largely you'll see lead from the bullets, it doesn't travel well, so on, in the groundwater, but you can have potential problems. More problematic is usually impact areas that see artillery shells, larger rounds, because they're carrying explosives in them. There's more than just the bullet you're worried about, there's also the chemicals being carried by the bullet.

Our concept was to say, if truly things are going to flow out here, let's first put a series of wells along that mouth, a picket fence, if you will, so we have an early warning sentinel system that tells us if there's a problem, it's heading off the problem.

Second logic was, if we do that, and we start to see a problem here, we can very quickly implement a safety net by drawing down wells in this area and essentially putting in a

pump-and-treat capture system so the contaminated groundwater cannot get off-site.

Then we were going to place wells around the two -- in this case around this potential source area, DA-3, and down-gradient of this, which is DA-2. The reason I say this is we didn't know exactly where DA-2 was. Greg has done a great job of identifying where we think it is, but it's still a broad area. We didn't want to go into a needle-in-a-haystack area, go out 20 feet from where it is, put a well in, not see anything, and think it's clean. It improved our chances of intercepting any plume that might be there.

The concept then was we'll evaluate these wells. If we see nothing, we're off to a good start. Meanwhile, as you know, we have all kinds of soil sampling going on in a grid throughout all of this area. When we put these wells in, we collected some soils samples there. The guys doing the small arms ranges are also collecting soil from the bottom of the pit and up from this area (indicating).

If anything is seen in those soil samples, it's soluble and mobile, looks like it could be a source for contamination, then that will lead us to go back up and look at the groundwater there and we'll know we're at least focused on an area that's a likely source.

Right now what we've more or less done is gone to

the throat and said, it can't get out if it doesn't pass through here, so we have a sentinel system in place. That was the concept behind what we did.

What have we found so far? What we found is this model works pretty well. Indeed, there's an alluvium. One of you asked the question: What is an overburden well? When I have a bedrock system and I have soil above it, that soil is called overburden. It's small particle-sized materials, so sand, silt and clay, that weathered off this mountain and placed on top of the bedrock or has weathered in place, hence overburden. It's over the bedrock.

The wells that we have placed, what we try to do is place them at two depths: shallow ones in what we believed was -- well, what was the first saturated zone encountered, the first water that can actually flow in the ground, we screened a well in that area. We tried for some deeper wells looking for the Troutdale formation. That is the productive aquifer that's used throughout this area.

The alluvium system does not produce very much water and is not a good source for potable supply. In fact, in the state of Washington, if you can't get down 15 feet before you hit water, you're not supposed to put a potable well in there. The state has held they want some good, clean soil over the top to help protect your water supply. But more importantly, it's the Troutdale that produces enough water that you can put

in supply wells and get good, constant supply. So we were looking for that.
What did we find out here? Let's take ourselves a cross-section right through like this (indicating). What we found is, as you would suspect, there's a bedrock surface there. Now, on the sides, that bedrock comes up rapidly. Let's say we take our line all the way back just to give a representation of that. Somewhere back in there when we get to where the mountains have been pushed up, this bedrock gets very steeply inclined. Next what we found is that there is, indeed, an alluvial layer here. Somewhere down towards the west we start to see this tapering off and disappearing, and the Troutdale starts.
This is DA-3 (indicating). We did not find the Troutdale at DA-3. We found alluvium down to the weathered bedrock surface at this point. Now, I got to tell you, I have not seen all the well logs, and we need to evaluate that further. I'm giving you our first impressions in the spirit of trying to share with you what we know as fast as we know it.
ERIC WAEHLING: Gaynor, just to carry on that. I also want to just make sure that everybody understands, this is the Army's interpretation of the preliminary data. It still needs to be confirmed and reviewed by the Department of Ecology and EPA. I want to make perfectly clear, so nobody

thinks we're misrepresenting anything, this is the preliminary data as the Army interprets it. It needs to be confirmed and reviewed by everybody. I want to make sure you all know that.

GAYNOR DAWSON: Sure.

Here is the property boundary. At the property boundary, and we put in four wells around here, both shallow and deep, they were all in the Troutdale. The Troutdale actually surfaces out here. We did not find what we felt was an alluvial over it.

So somewhere between DA-3, the Demo Area 3, and the boundary, the Troutdale pinches out and disappears. Why do I say that? Well, real good factor we found here, we put five wells in around DA-3, four of them shallow, you'll see on those maps, we surrounded it, then we put a deep well in. The deep well was based right in this weathered rock, right at the surface. It's artesian. This was put in during the wet weather. When you take the cap off that well, the water -- the wellhead sits three foot above the ground, the water comes right up and out of that. This is the second site for Olympia beer, for those of you who can remember when there was an Olympia beer. It's not even a mill anymore.

This one is artesian. How can that be artesian?

It's artesian because this overburden is so tight, clays and so forth, that the water that comes in at the mountain runs down the weathered bedrock like it was in a pipe. And it's

got enough head on it, because it starts clear up here on the mountain side, that it's enough to push it right out the top of that well when you put a pipe down there and let it out. Over time, as we go into the summer, this water starts to go away, we don't have as much rainfall, not as much infiltration, this head drops down the mountain, and pretty soon it won't flow out of that well. Some of you have probably all observed that if you've gone out to Demo Area 3 very often.

This is kind of the crater hole, 20 foot across, usually full of water. Looks like the water is actually higher than the ground around it. This last summer, it was dry. Drought conditions here and all were such that the head on the mountain here was clear down in the lower reaches, and it wasn't enough to push the water up through into that crater bottom.

Now, what that means is, when it's pressurized, this water is trying to flow up here. When we get out here in the Troutdale, the gradients were all down. The water, as you would expect, is trying to flow down. As the Troutdale gets very thick out here, those of you that are familiar with Clark County's water supply, you know that the Troutdale is a very extensive aquifer out there, and it gets very deep. It's wedge-shaped and growing in thickness as it comes out. These are the old Wallula flood deposits. The water coming here,

the rain hits on the surface, it's working down. The flow is moving out (indicating).

First thing is we have a pretty good picture now of what this looks like in cross-section, how that works. The next question really is: Was our model correct? If you look at the colored chart, what you see are the flow lines. The water will flow from the bigger numbers to the smaller numbers because that's the surface of the lake that lies under the soil that you're seeing there.

So if we draw our basin again, what we see, and we didn't just measure the new wells, we had them measure existing wells at the same time, and as you can see from those contour lines, the flows basically support a groundwater pattern that is perfectly analogous to Lacamas Creek. The groundwater is responding to a bedrock surface just as Lacamas Creek is responding to the topography or the soil surface, and they're all trying to get out of the basin at the same time.

Now, the groundwater is flowing a lot more slowly than the creek is. This addresses another question one of you asked. What is hydraulic conductivity and what is velocity? The analogy I like to use is an electrical one that may not help a lot here. Let's look at it this way.

Flow of water, first of all, responds to pressure difference, which is our gradient. The bigger slope we put on it, the faster the water will flow down. Hydraulic

conductivity refers to the ability for that fluid to flow through the media that it's trying to flow through. If it was just water in a pipe, you could look at it, it would flow just as fast as it could get down a pipe. When you pack that pipe full of soil and rocks, those water molecules hit those solid objects and they have to work their way around it. When they rub against those particles, friction slows them down. Hydraulic conductivity then is kind of the reverse of resistance to flow. If you think of electrical conductivity, you have what's called conductance versus resistance. Conductance would be identical to hydraulic conductivity, hence the common term conductivity.

IAN RAY: Are questions in order as you speak?

GAYNOR DAWSON: Sure.

IAN RAY: The units are the same in this Landfill 4 investigation. Hydraulic conductivity and groundwater velocity are both in centimeters per second.

GAYNOR DAWSON: That's correct.

IAN RAY: How can they be different?

GAYNOR DAWSON: Because one of them is, in fact, talking about a flow across.

IAN RAY: In the electrical analogy, conductivity would also have a quantity component, wouldn't it? Like it's amperes, a quantity.

GAYNOR DAWSON: That's exactly correct. Groundwater

velocity is measured as the gradient, that's the pressure, the forcing, times hydraulic conductivity. If you're looking at poor water velocity, you divide by the porosity. But gradient, you see, is unitless. It's feet per feet, just as you would measure the slope on a hill. I go down two feet for every foot I go out.
So this ends up having the same units as groundwater velocity, but it's a different number because it's been modified by what my gradient is. If I'm looking at poor water velocity, which is porosity, that is dimensionless, because porosity is a percent number. Yes, they have the same units, but they're not the same number for any given situation.
Ben, do you want to jump on that, modify anything I've said?
BEN FORSON: You're doing pretty good.
DON WASTLER: Is a timber harvest, even a selective timber harvest, going to increase the velocity?
GAYNOR DAWSON: Good question. What typically happens when you change factors like that, you change the balance of how much water infiltrates and gets into the system in the first place versus how much runs over the surface.
DON WASTLER: Kind of what I'm asking is, as you guys are doing this, are you accounting for what Clark County has in their Reuse Plan for timber harvest?
GAYNOR DAWSON: As we're doing what?

DON WASTLER: Analyzing this for water flow and contaminants flow.

GAYNOR DAWSON: At this point, no. We're looking at current conditions. We're looking to see is there even contamination out there in the groundwater that poses a problem? Obviously, if we find a plume out there, and there are things that could happen that would dramatically change flow rates, yes, we'd have to take them into consideration. We're not there yet. What we have now is we have a pretty good model of where it's flowing.

We feel pretty good about where our wells are. In the very near future, hopefully a few weeks, we'll have the first rounds of data to tell you whether there's anything in that water or not. But I don't have those data yet.

DON WASTLER: As you were explaining this, with the velocity, I know that Clark County's Reuse Plan has a timber harvest, even selective, in mind. I'm just wondering how that's going to change that and how fast that stuff's going to flow towards the wells if it is there.

GAYNOR DAWSON: It certainly can have an impact on it. In my experience, if it's good husbandry of the forest resource, it will not have a significant impact on it. But there's no question, it can have an impact.

What it does, it changes the soil's capacity to hold moisture. The less it can hold, the faster it's going to want

to move off when it rains.
KAREN KINGSTON: You've said "if there is a plume." Are you implying to us that you do not feel Landfill 4 has a plume?
GAYNOR DAWSON: I'm not speaking to that. I'm speaking about the new wells that have gone in. There's no question there's a plume at Landfill 4. The good news is, you can see on your map, it's a long way from getting off-site. We have lots of time to evaluate and do something about it.
KAREN KINGSTON: Then talking about the hydrology. Where the bedrock rises, the alluvial lessens, however you want to say it, because the Troutdale is up closer to the surface, are you --
GAYNOR DAWSON: Let me be sure you understand correctly. The bedrock is falling away, and the Troutdale is thickening as the bedrock falls away as you go west off-site.
KAREN KINGSTON: So as you go west, in that scenario, would that change the hydrology to where the water then would not just run into Lacamas Creek, it may go in a side forward direction?
GAYNOR DAWSON: We're not saying the water runs into Lacamas Creek. We're saying it is paralleling Lacamas Creek, flowing in the same direction underneath the surface just as Lacamas Creek is flowing. That's very common. Your groundwater systems typically flow down the valleys under the

soil just like your surface water is flowing on top of the valley.

We're not saying that's all discharging into Lacamas Creek by any stretch of the imagination. As the Troutdale thickens, you have massive quantities of water flowing down there. That's why your wells are so productive.

KAREN KINGSTON: What studies are you basing your Troutdale perspectives as far as this goes? I thought the last known study out there was by Mundorf, 1964. What are you basing your Troutdale studies on? I didn't know there are any.

GAYNOR DAWSON: There's a tremendous number of wells that have been developed into the Troutdale. The Troutdale is typically characterized by boulders and large classed gravel materials. It's been identified in part, obviously an interpretation on our part, other also have to look to see if they agree, it's a dramatic change between the fine clay-like materials in alluvium and the much more productive graveling of the Troutdale.

Me personally, I've put a whole lot of wells in, in a place called Boom Snuff (phonetic), BOC gases site. If you go back far enough, I'm and old man, we studied the whole Clark County aquifer for people. We think we have a pretty good idea how to distinguish it when we find it.

SEAN SHELDRAKE: You briefly covered the Demolition

Area 2 well locations. I'm confused as to why they're so far down-gradient from the approximate demolition area location based on the aerials.

GAYNOR DAWSON: Because it's so steep in there, we could not get a drill rig higher up the hill, not comfortably. We went to where we could safely put a drill well in. We worked with it the WDOE geologist, felt it was the safest place to put it because we didn't know the exact location. I'm not casting dispersion on Greg, but we're not really sure where the activity was. We wanted to be sure we were far enough down we would intercept a plume because you can't drill a well every two feet.

ERIC WAEHLING: Further, at the time we didn't have Greg's interpretation of the photos either.

GAYNOR DAWSON: Fair enough.

SEAN SHELDRAKE: The point I'd like to raise is that at 700 to 1,000 feet from the approximate demolition area location, even if there was something there that's several orders of magnitude above drinking water standards, it could very well dilute by the time it gets to the well locations to the point it's non-detectable. In essence, we're hanging our hat on the soils sampling, isn't that correct?

GAYNOR DAWSON: If you believe there's that much dilution potential in there. Nobody is going to put a well between those and Demo Area 3, so what's the risk you're

worried about if it's already naturally diluting below levels you would see it?
SEAN SHELDRAKE: I'd be worried about what potential source exists if the soil samples -- what potential source of contamination exists within the demolition area that the soils sampling isn't designed to identify.
GAYNOR DAWSON: But we gridded the demo area and we looked for a full suite of chemicals. We didn't just look for explosives. What are we missing?
SEAN SHELDRAKE: The point I'm trying to raise is we're hanging our hat on the soil sampling plan for Demo Area 2 essentially, isn't that correct?
GAYNOR DAWSON: I guess I would --
SEAN SHELDRAKE: The wells could be 2,000 feet away from the source of contamination.
GAYNOR DAWSON: It is possible the source is far away. What I would contend is if we don't see anything there, it probably suggests there's not a great risk, then the risk is a soil risk. We have gridded all the areas we can find up there as potential sources, and we should see something if there's truly a risk. If we don't see it in the soil, we don't see it in the water, I fail to see where there's a significant risk.
SEAN SHELDRAKE: Why I'm concerned, we're hanging our hat on the soil sampling plan. EPA has fundamental

problems with the quality assurance plan that was used for this soil sampling effort. I think folks should be aware that these wells, in EPA's opinion, are too far away to be a safety net in terms of proving the non-existence of groundwater contamination.

BEN FORSON: One way of looking at such a scenario, look at it -- look at it this way. The source can only be in the soils within the demolition area, in the soil. So you look for contamination in the soil formation in that area. If you find soil contamination, chances are it's in the groundwater. At that time you can assess whether you have to install new monitoring wells as close as possible to the demolition area that can be done. That will also be done depending on the soil levels that you find.

If there is no contamination in the soils within the demolition area, if you don't detect any contamination there, chances are you don't have the source at the moment. It could be that you had it, but it's already leached out so you're not seeing it in the soil.

So then the question becomes: It's already a plume in the groundwater, and the next assessment is between this point and the point where I have my well, is there any receptor, sensitive receptor, between this area? If there are no sensitive receptors in this area, then you have to assess, if there is a plume coming through from this soil, this well

that I have, is it going to intercept it? That's the most important thing.
DON WASTLER: Point of order. A bunch of people had their hands up.
KAREN KINGSTON: We'll let everybody finish their thought here.
IAN RAY: This is very difficult, but I would ask you rather than a receptor in between those two points you just described, is there a possibility of a short circuit where the contamination goes off to the side somewhere?
BEN FORSON: That is the question I ask. If you have a plume, is the well that you have, is it going to intercept it? You have to assess that scenario.
IAN RAY: It might not intercept it.
KAREN KINGSTON: True.
BEN FORSON: If that becomes a scenario, then you have to investigate it.
GAYNOR DAWSON: What I would suggest to you is, with that in mind, we put a line across here to intercept it, we put a line across here to intercept it: two points at which we can intercept it. Can we guarantee with a hundred percent certainty we will intercept everything? No, we can't. But if we have trouble intercepting it with that many wells, we're talking about an awfully small plume that has somehow slipped between the picket fence.

It's possible, anything is possible. We're trying to manage this in a way that doesn't break the bank, because the Federal Government is our taxpayer dollars, as well. We've taken a shot. Right now what the model is telling us, what the wells are telling us, is this is a bedrock slope and that water is going to flow down to these wells because it really doesn't have anywhere else to go. It's on a ramp. It's going to the bottom.

IAN RAY: Go ahead.

KAREN KINGSTON: The next person would have been Chuck, then Christine.

CHUCK MASON: I've just come on board here in the last couple months, so I don't know what all's been done. The surface water in Lacamas Creek, has that ever showed any type of pollution?

ERIC WAEHLING: The three times that we've tested it, no.

CHUCK MASON: No? Then why are we wasting money drilling holes in the ground then? Wouldn't it show in the groundwater first?

ERIC WAEHLING: You mean surface water?

GAYNOR DAWSON: There's a potential you have contamination.

KAREN KINGSTON: We have contaminated groundwater.

GAYNOR DAWSON: There's a potential you can have

contaminated groundwater that has not daylighted in the stream. It could daylight in the stream. You have so much flow in the stream that it can dilute the low detection limits.

You make some good points. We've chosen to err on the safe side. The safe side said: Let's put some additional well banks in to see if there's anything moving towards Lacamas Creek that we're not seeing in the creek.

KAREN KINGSTON: Christine.

CHRISTINE SUTHERLAND: If Demo 1 has a couple of deep wells along with the shallow wells, what is the reason behind Demo 2 not having any deep wells with their grouping?

GAYNOR DAWSON: First of all, we wanted to see if there was anything there. The contamination is coming from the soil, so it encounters the shallow water first. The reason there are deep holes at Landfill 4, we found some stuff, and we need to see: Is it going deeper or out laterally?

If you look at the layering here, here is our soil, here is the shallow groundwater, here is the deeper groundwater (indicating). If the chemicals are coming from the soil, it has to pass through here. We're looking for its trail before we worry about whether it's going deeper.

CHRISTINE SUTHERLAND: If you place your shallow wells so far away, is there a potential that we could miss

them?
GAYNOR DAWSON: There is a potential. As I say, we've got to evaluate the well logs to make that assessment. In about two weeks, we'll have the soil data up there. That will tell us a lot as to whether there's any reason to think there's anything in there.
CHRISTINE SUTHERLAND: There was shallow wells put in Landfill 4 before they put the deep wells in, is that right?
GAYNOR DAWSON: I believe that's correct.
CHRISTINE SUTHERLAND: I thought you put six of them in at the same time.
ERIC WAEHLING: No. The first two that went in --
CHRISTINE SUTHERLAND: -- were shallow?
ERIC WAEHLING: Yeah, I believe so.
VALERIE LANE: They didn't even draw water off the one.
ERIC WAEHLING: These were the ones that were installed back in the '97/'98 time frame.
KAREN KINGSTON: I think Ian is next.
BRUCE OVERBAY: I think Val is next.
VALERIE LANE: I had a question about your Demolition Area Number 3. I believe the water doesn't just flow down. I live right across the street from Camp Bonneville. The water comes from the south and flows back

into Camp Bonneville. It has to be coming off the hill there. It must be flowing --

GAYNOR DAWSON: You're up in this area (indicating)?

VALERIE LANE: Right across the street. My water comes around my place, comes down off the hill, flows back to the north, back into Camp Bonneville.

ERIC WAEHLING: The southwest corner, Valerie?

VALERIE LANE: Yes.

ERIC WAEHLING: Actually, if you look at the map.

VALERIE LANE: I'm right across from the south gate, 900 feet, right here (indicating). There has to be water coming this way, comes down this way, then it goes right back in here (indicating).

GAYNOR DAWSON: If it's coming back off this way, it's quite a bit higher than where we are with these.

VALERIE LANE: These are big hills here (indicating).

GAYNOR DAWSON: Right.

VALERIE LANE: The water has to be coming back. This is an artesian well.

GAYNOR DAWSON: If you were to draw a line to these peaks right here, that's the ridge line. You're right, there's an area here where water has to flow to the south.

VALERIE LANE: Comes back that way (indicating).

GAYNOR DAWSON: That's correct.

IAN RAY: On Figure 3.3 in the expanded site investigation, are you familiar with that map?
GAYNOR DAWSON: If I look at it close, probably.
IAN RAY: My question will be, it shows the Troutdale aquifer as limited by this line (indicating). It doesn't show whether the Troutdale aquifer extends northeasterly under the QA, which is called alluvium.
GAYNOR DAWSON: My only caution for you is you'll notice that's a dashed line. To a geologist, that means he's assuming where the boundary is, he doesn't know it accurately. All I can tell you is, when we drilled the well at Demo Area 3, we did not find it. We did not encounter the Troutdale. In fact, the deep well there bailed dry.
IAN RAY: This configuration shown on this map is also shown on USGS maps that have been obtained in Portland. It shows that little tongue going out there past Camp Bonneville. The tip of it is 2,000 feet directly south of Landfill 4. So if this is the pinch point of the Troutdale aquifer, we're only 2,000 feet from Landfill 4, and you can get contaminated water following the bedrock and slipping into the Troutdale aquifer.
GAYNOR DAWSON: I understand that. What I'm telling you is our data do not show that that is a real finding.
ERIC WAEHLING: Can you comment on how USGS usually defines a regional geology?

GAYNOR DAWSON: I don't want to put myself in a position of speaking for the USGS. All I can tell you is what we've seen out there, we did not find it at Demo Area 3. They could be right. There could be a ton of it up in there somewhere. We have not seen it in the drills wells we drilled.

IAN RAY: You only drilled one boring to locate the Troutdale aquifer?

GAYNOR DAWSON: We drilled four.

IAN RAY: Was it a cluster of six?

GAYNOR DAWSON: We drilled four along the boundary of the site, one back at the demo area where we did not find it. That's why I say, we felt we had bracketed the line, at least in the area of Demo 3, as to where the Troutdale pinched out.

SEAN SHELDRAKE: I just wanted to make one clarification in terms of EPA's position on Demolition Area 2. If there was a plume that fell short of the nearest well, we would not consider that a small plume. If there's a plume that fell just within the red box, we wouldn't consider that a small or innocuous plume necessarily just on the face of it.

Again, because we're basically hanging our hats on the soil sampling plan, a question for Eric. I'm curious why EPA didn't get a response to our quality assurance plan

comments.
ERIC WAEHLING: The comments on Landfill 4? There were numerous responses.
SEAN SHELDRAKE: On the soil sampling quality assurance plan, firing ranges.
ERIC WAEHLING: There were numerous responses to that.
SEAN SHELDRAKE: We never received comments on the fundamentals, chain of custody.
BEN FORSON: Is this the right forum for response?
SEAN SHELDRAKE: I think so. You may disagree. I think it's important because the investigation currently is going to be hanging its hat on soil sampling data for Demolition Area 2. Given the disparate location of the wells, the data quality, in EPA's opinion, is going to be suspect without some fundamental adherence to quality assurance.
ERIC WAEHLING: Well, Sean, I can answer in this way. We are following the standard procedures that are being used throughout the country elsewhere that we are using --
SEAN SHELDRAKE: What procedures are those?
ERIC WAEHLING: We're using EPA certified labs. The Department of Ecology was satisfied with the QAP.
SEAN SHELDRAKE: What quality assurance guidelines are you following?
ERIC WAEHLING: We're following Corps of Engineers

quality assurance standard guidelines.
SEAN SHELDRAKE: If you have a citation for that, I'd be interested in seeing it.
ERIC WAEHLING: I don't have it right here.
SEAN SHELDRAKE: At any point I'd be interested in seeing that.
ERIC WAEHLING: The bottom line was, we felt that our QAP was sufficient, technically sufficient to produce data that was of sufficient quality to meet our needs, and that it was time to actually get out and start sampling and stop having back and forth on technical details.
SEAN SHELDRAKE: I'm not aware of any quality assurance template that your soil sampling plan adhered to.
ERIC WAEHLING: Okay.
KAREN KINGSTON: I have a question myself. I would certainly hope Department of Ecology is on the same keynote as EPA with that.
ERIC WAEHLING: She asked if Ecology was on the same keynote as EPA.
BEN FORSON: With regards to?
KAREN KINGSTON: With everything Sean was just speaking to.
DAWN HOPPER: Can I just clarify? I don't understand your question. Are you asking if Ecology agrees with the statement that Sean just made that he hadn't seen a

QAP yet?
KAREN KINGSTON: Yes.
SEAN SHELDRAKE: I didn't say that. The quality assurance plan prepared doesn't follow any established guidelines that I'm aware of, just to be clear. They do have a QAP. It's just I didn't think the quality of the QAP met any established standards.
DAWN HOPPER: So your question to Eric is that you'd like to see that?
BEN FORSON: Do I agree with the QAP that was used?
KAREN KINGSTON: That you have established procedures that you have in place that maybe EPA does not. Is that what you can tell us?
BEN FORSON: Ecology's requirements for preparation of sampling a plan is different from EPA's. Based on Ecology's requirement, that was adequate.
KAREN KINGSTON: So the lack of or nonexistent procedures that Sean was speaking of was okay with Ecology?
ERIC WAEHLING: I object to the terms "lack of" or "nonexistent." They existed.
KAREN KINGSTON: They existed with the Corps of Engineers.
BEN FORSON: Sean is aware of EPA's requirement. Are you aware of Ecology's requirement for site preparation?
SEAN SHELDRAKE: I wasn't aware that that had been

followed. It wasn't cited in the document that I could find. That's why I'd asked what guidance document, be it Army, be it Ecology, be it EPA, someone's: Whose data quality guidance document was used to prepare this quality assurance plan? In comparing it to EPA's quality assurance guidelines, the QAP was lacking, it was lacking.
BEN FORSON: I can understand you if EPA requirements were not met.
SEAN SHELDRAKE: They weren't.
BEN FORSON: Okay, I can understand you. But MOTCA requirements were met.
KAREN KINGSTON: Were met.
SEAN SHELDRAKE: What were those requirements, in terms of a citation?
BEN FORSON: Look at the regs.
SEAN SHELDRAKE: Do you have a citation?
BEN FORSON: It's in the regulations.
SEAN SHELDRAKE: I'm looking for what template guidance, what have you, did the quality assurance plan follow?
BEN FORSON: We discussed this. I told you particularly don't just look for order of things, evaluate every topic on its own merit.
SEAN SHELDRAKE: Again, EPA's position is --
BEN FORSON: You wanted them to follow EPA guidance

word by word.
SEAN SHELDRAKE: I never said that the Army had to follow EPA guidance. I said they had to follow someone's guidance with respect to data quality. To this day, I have not found evidence of that.
KAREN KINGSTON: I believe he's just looking for a citation. Could you provide him with something like that during the week?
DON WASTLER: He's looking for a rule book, some document that says you're following something rather than writing your own rules.
BEN FORSON: I can send him a chapter of the regulations that addresses that.
KAREN KINGSTON: Great.
DON WASTLER: One quick little thing.
KAREN KINGSTON: Just a minute. Then we'll get to you.
Has the Troutdale been designated as sole source aquifer?
GAYNOR DAWSON: I don't know the answer to that.
KAREN KINGSTON: Wouldn't that be something you need to know?
GAYNOR DAWSON: I don't believe it has. But I can't categorically say anywhere in -- somewhere in the state it may have. I do not believe it has in this region. It's possible

somewhere. I'm not aware of that to the extent it may have been.

DON WASTLER: May I suggest you collaborate with Mr. Ray on this. He's done some extensive research on this very thing. He's got maybe some stuff you guys can work together on. I know he spent some time on this. He's brought it up at numerous meetings before.

GAYNOR DAWSON: We'd be happy to see anything that would help elucidate.

IAN RAY: Thank you, Don. But I'm trying to understand this in the first place. I don't know that you want to collaborate with me yet. I want to collaborate with you.

VALERIE LANE: He'll let you know.

GAYNOR DAWSON: Fair enough.

DON WASTLER: I'm saying he's done some extensive research on this. He's not talking off the top of his head.

JEROEN KOK: You mentioned at the beginning of your presentation that you started out with a conceptual model; the subsurface mimics the surface as far as water flow.

GAYNOR DAWSON: Right.

JEROEN KOK: You've been able to collect some data based on the well logs and what you found. I'm wondering if you can state what your confidence level is on the conceptual model based on the data that you've collected.

GAYNOR DAWSON: I'm very confident of it.
JEROEN KOK: Could you put a percentage on it?
GAYNOR DAWSON: What, are you a lawyer?
I guess I'm well above 75%. I'm in the 80s. You know, I think to defy that model now, what you'd have to find is some significant fracture or fault zone or something that may somehow provide a conduit for water to flow alternately. That's pretty doggone confident bedrock out there. The uplift here occurred before the Troutdale and the more recent alluvium were laid down. This is all very consistent with the geologic history of the region.
I would be less confident if we found something out there that was somehow questionable given that model. But everything we saw was absolutely consistent with the model. So I'm feeling pretty good about it.
JEROEN KOK: Thank you.
GAYNOR DAWSON: I'm an optimist.
KAREN KINGSTON: I have a question. It would seem to me, just being a layman in geology, if you have soil, you're concerned there could be contamination in it, you punch down with a well through the Troutdale aquifer, and how can you tell me you're not providing a transport hole directly into it, without having any knowledge, because you're not doing soil sampling first?
GAYNOR DAWSON: Here is the crater. First of all,

the four shallow wells were placed stepped out so they did not go through the source area.
KAREN KINGSTON: I'm talking about the bottom ones down by Lacamas Creek.
GAYNOR DAWSON: That's not a source area. What we did -- it's all Troutdale. There was no alluvium. If there's a conduit out there, it already exists. It's all a single, contiguous gravel unit.
ERIC WAEHLING: Maybe her question is more to the line of how is a well constructed to keep from cross contamination.
GAYNOR DAWSON: The wells are constructed with bentonite, grout, dikes if you will, to keep water from being able to flow down the outside of the pipe and intermix. What I'll tell you is nothing was found out here that would act as a natural blocking layer. So the Troutdale out here is mixing itself. It had downward gradients and the water is moving down all along the Troutdale. There weren't contiguous what we call aquatards or layers that would stop it from mixing naturally. That's why it's such a productive aquifer.
KAREN KINGSTON: Where the pipeline comes through, the EIS for the Northwest Natural Gas pipeline, they said there's liquefied soil, soil liquefication (sic).
ERIC WAEHLING: Liquefaction.

GAYNOR DAWSON: That's in the alluvium. That's not where the Troutdale is at the surface, it's back up here in the alluvium (indicating). That's what happens when certain types of soil get saturated, they liquefy.
KAREN KINGSTON: The pipeline goes across Lacamas down here at the bottom.
GAYNOR DAWSON: That's right.
KAREN KINGSTON: Not back where you're talking about.
GAYNOR DAWSON: I'm sorry. It's right here (indicating). We did not find the Troutdale back here with the well. We found it here on the boundary (indicating). It may exist in parts that we didn't bore. I don't want to mislead you. Where we put our wells, the only place we found the Troutdale was on the property boundary.
ERIC WAEHLING: I want to mention it's 9:15. I know Gaynor and myself, I don't want to speak on behalf of Ben and Greg, we're willing to stick around. I wanted to let people know it was 9:15, give an opportunity for folks to respond however they want to.
IAN RAY: I don't want to keep you, but I do want to get answers to these questions. If somehow someone will commit to giving me answers.
ERIC WAEHLING: I'll hand you the written answers today, right now. We can continue talking. I just wanted

folks to know.
DON WASTLER: I have something for open discussion.
I'm staying.
ERIC WAEHLING: That's fine. Just wanted to let
everybody know.
JEROEN KOK: Just so we can weigh our options, Eric,
is it an option to invite Gaynor back for a subsequent
meeting?
ERIC WAEHLING: Certainly. It's dependent upon his
availability.
DON WASTLER: He said in a couple weeks he'd have
more information.
ERIC WAEHLING: Right. Gaynor is a pretty busy guy.
We can certainly try to coordinate with his schedule to have
it mesh with ours, as well.
GREG JOHNSON: He's very popular.
GAYNOR DAWSON: I don't know about that. Sometimes
that's not good either. I would be happy, as the data come
in, to talk to you about it, tell you how I view it. As far
as I'm concerned, the data will hopefully speak for
themselves.
ERIC WAEHLING: I'm more than willing to pay Gaynor,
to have Gaynor come back.
CHRISTINE SUTHERLAND: I would like to have him come
back and interpret maybe some of what we found out.

KAREN KINGSTON: Still we need to move on with the discussion. I imagine some of them are going to be directed at him from the questions.
ERIC WAEHLING: Do we want to give an opportunity for those people that need to leave an opportunity to leave, then we can continue the discussion. Does anybody need to leave?
VALERIE LANE: I'm going to leave. I have to work for a living.
DON WASTLER: I have something for discussion that everybody should hear.
ERIC WAEHLING: We've gone past our time, Don.
DON WASTLER: It wasn't my fault.
KAREN KINGSTON: Meetings for the RAB are anywhere from two to four hours. You were notified of that when you applied for the RAB. It's in the guidelines. If somebody has to leave, they have to leave. You can't keep somebody here just to hear everything. But that's fine.
ERIC WAEHLING: Before folks leave, do we want to establish when we want to have our next meeting, then we can continue on with the discussion.
JEROEN KOK: Next month.
ERIC WAEHLING: Do we want it next month?
KAREN KINGSTON: Yes. The next meeting is May 14th. We have a choice of the operations center, the PUD. We

actually double booked until we talk to everybody to see where you would rather have the meetings. We can have it at the PUD operation center or Fire District 5. Jennifer was able to book that. I'm in favor of the fire department because we can run over. Operations center we cannot. Does anybody have any input there?

BRUCE OVERBAY: This is all Fire District 5. Which station?

KAREN KINGSTON: The same place we've been doing it.

BRUCE OVERBAY: 88.

CHRISTINE SUTHERLAND: I like Camp Bonneville.

ERIC WAEHLING: I'd love to do it at Camp Bonneville. Unfortunately, it became obvious to me that it just isn't an appropriate facility for these meetings because of bathroom access, the condition of the stairs. I'm not comfortable continuing to do that. It needs work.

BUD VAN CLEVE: If we run short at time on PUD and have to cut it off, we're better off where we have more flexibility.

KAREN KINGSTON: That's the fire station, back where we were before.

BUD VAN CLEVE: By the Y Tavern?

KAREN KINGSTON: Yes. Does everybody feel good about that?

ERIC WAEHLING: May 14 at Fire Station 88.

BUD VAN CLEVE: At the Y Tavern.
VALERIE LANE: It's gone.
ERIC WAEHLING: For those that need to leave, please feel free, we'll continue our discussions here tonight.
CHRISTINE SUTHERLAND: Just a clarification quickly. Your key on this map has a deep monitoring well, shallow monitoring well, do you have a range of depths that those were -- what distinguishes a shallow and a deep?
GAYNOR DAWSON: Shallow is first encounter groundwater. Deep, the attempt was you -- that you had to encounter the Troutdale before you could do deep. That's true of one, two, three and four deep. Five deep, because they encountered weathered bedrock before they encountered the Troutdale, it only went 62 feet. I can't give you a depth, without looking at the data. Those were the field guides that the driller was given.
CHRISTINE SUTHERLAND: Can you tell me a couple depths of the one right by Demo 2?
GAYNOR DAWSON: No.
CHRISTINE SUTHERLAND: You have 11S and 9S.
GAYNOR DAWSON: I don't remember off the top of my head.
CHRISTINE SUTHERLAND: You don't even know if it was 15 feet?
GAYNOR DAWSON: I don't.

ERIC WAEHLING: They were standing in water when they were drilling it, so they're not terribly deep.
GAYNOR DAWSON: Shallow ones.
ERIC WAEHLING: Demo 2.
CHRISTINE SUTHERLAND: They're seven thousand feet away.
ERIC WAEHLING: They're not seven thousand feet away.
CHRISTINE SUTHERLAND: How far are they?
GAYNOR DAWSON: Seven thousand is over a mile.
ERIC WAEHLING: Up to a thousand feet away.
CHRISTINE SUTHERLAND: You sampled just the water that I can dig a hole and get to?
GAYNOR DAWSON: The screens are 10 to 15 feet long. You have 10 to 15 feet of the saturated zone that you're encountering and taking a sample from all of that mixed. It's not just the surface two inches of water that you encounter, it's 10 to 15 feet. I have to look at the well to tell you whether it's 10 to 15. They vary depending on how deep bedrock was and so forth.
CHRISTINE SUTHERLAND: You feel that could be a representative sample of potential contaminants from 700 feet away?
GAYNOR DAWSON: Absolutely.
ERIC WAEHLING: Yeah.

JEROEN KOK: Ian has put quite a bit of effort into developing a whole bunch of questions. I think we should turn it over to Ian.
CHRISTINE SUTHERLAND: Are we moving from him?
ERIC WAEHLING: The hydro questions?
JEROEN KOK: Right.
ERIC WAEHLING: Gaynor has responses. We were trying to tick off a couple of them.
GAYNOR DAWSON: Do you want me to give these to them?
ERIC WAEHLING: Just take a couple and do a better job explaining.
GAYNOR DAWSON: Are you comfortable with number one relative to hydraulic conductivity and velocity?
IAN RAY: No. They're both the same units and both talk about speed velocity.
GAYNOR DAWSON: One is actually how fast the groundwater molecule moves. The second is the conductance or the ability to allow water to move through a matrix. Yes, they have the same units. That's because one of them is multiplied by a unitless factor to become a velocity.
IAN RAY: They become important to me as I read 7.1, geology in conclusions, which your company did not write, as a way of straightening out the confusion between slug tests and

hydraulic conductivities, what they mean or might mean to the flow of the contaminated groundwater out of Landfill 4.

GAYNOR DAWSON: Sure. Maybe I can help by giving you an idea of what a slug test is and how it works. Are you familiar with that? Just stop me if I get too basic here. I'm not sure I know the audience's understanding level.

DON WASTLER: I have been interrupted in the middle of what I was saying in lieu of the agenda of these meetings before. Now everybody's gone. I had some things to address Clark County with in the open discussion. It's gone, it's history. I have to wait another month before I can do it now. Commissioner Stanton said at the last meeting we would be in communication. We're not in communication. We're lost. It's history. Everybody's gone. What I had to say was important, very important. It had something to do with every single person in this room, Camp Bonneville and every single person in this country. But everybody is too busy worrying about the --

(Mr. Wastler leaves the meeting.)

ERIC WAEHLING: If I could take the opportunity for a quick second.

DAWN HOPPER: Sorry we have to leave also. I wanted to let everybody know there's a meeting being held, it will be an open house, public meeting for the Enforcement Order. It's on April 29th. We'll be mailing information to each of you

about it. It's in Vancouver at the Water Resources Educational Center. It will be in the evening. It's a combination of open house public meeting. It runs from 6 to 9. First hour is an open house where people can come and ask questions of the Army, the County will be there. Ecology is hosting the meeting. There will be a presentation made by Ecology about the proposed order, then questions and comments will be entertained and we'll answer as many of them as we can during the meeting. The focus of the meeting will be on the Enforcement Order. You'll all get something in the mail, but I wanted to let you know so you can put it on your calendars.
ED MARSH: Where?
BUD VAN CLEVE: Water Resources.
DAWN HOPPER: Water Resources Education Center.
KAREN KINGSTON: What time?
DAWN HOPPER: 6 to 9:00. 7:00 is the presentation.
KAREN KINGSTON: How are you notifying the public?
DAWN HOPPER: There will be display ads put in the local papers and a mailing list is being developed that will be sent out to individuals, plus specific people that are on mailing lists for the County or Army with regard to this project.
KAREN KINGSTON: Are you going to be sending out to the direct neighbors around Camp Bonneville?

DAWN HOPPER: Yes.
KAREN KINGSTON: How did you get that? From tax rolls?
DAWN HOPPER: The County is pulling that together for me. I'm not sure. They're looking at a one-mile radius.
BUD VAN CLEVE: You're going to be sending out e-mail notice?
DAWN HOPPER: Probably not. It will probably just be by hard copy, post mail, largely because we're going to mail it out right away and don't have an e-mail list developed, but we'll have a post mail list developed.
BUD VAN CLEVE: Will Holly Gail get the information?
DAWN HOPPER: I don't know who that is.
BUD VAN CLEVE: Neighborhood coordinator for the County.
JEROEN KOK: I'll talk to Don about that.
ERIC WAEHLING: It will be published in the newspapers.
DAWN HOPPER: Thanks for letting me interrupt. See you next time. I hope I see you on the 29th. Call me if you have any questions about it.
ERIC WAEHLING: Gaynor.
GAYNOR DAWSON: Ready to try again? The proposition here is we're trying to figure out how easy or hard is it to make water flow through this system.

A slug test, the premise here is, you take a slug, you put it in the well. A typical way they might do that is with a baler, a cylinder that's dropped into the well. It displaces its volume in water. So as that goes down in the well, two things happen: water starts rushing out this way, but water also goes up the pipe because it's just got to move out of the way to make room for that cylinder.

They measure how long it takes for this water level to go back down to where it was. That gives them a measure of what's the acceptance of this system to water? How easy is it to move water out in this system? There are formulas from which you take that and you can calculate what its hydraulic conductivity was.

Then they'll remove that cylinder. Now they've got a hole in the water, and the water's rushing back in to fill the hole. They measure how long it takes for the water level to come back again. So now I have a measure of how easy it was to get water in, how easy it was to get water out.

Another way they may do that is put a slug of water itself in the well, drop it in, see how long it takes for it to come back to normal level.

That's what a slug test is. It's measuring -- as you can tell, there's no way to measure velocity from that. But they know the area of the screen and they know how long it takes to re-equilibrate. That tells them how much water

passes over a period of time through a section or a square area of screen. It's a flux measurement. You have gallons of water per square foot per second. What's a gallon?
IAN RAY: It's a quantity.
GAYNOR DAWSON: It's a volume. If you convert that, you get cubic feet per square feet per second. When you cancel those out, that ends up feet per second. It has the same unit as velocity.
IAN RAY: First thing occurs to me, it's also done in a very local place.
GAYNOR DAWSON: Absolutely.
IAN RAY: Not applicable to anyplace else.
GAYNOR DAWSON: That's very true. That's the major flaw with a slug test. It's a test done to give you a preliminary idea of hydraulic conductivity.
What we typically do some point after this is run what's called a pump test where we will have a number of wells, and we'll start drawing water down, measure how far down these other wells are drawn and over what time period, and we'll graph it out and see how they recover. From that, we get this same kind of measure over a much larger area and more meaningful number.
Slug tests are very limited value, you're absolutely correct.
IAN RAY: Am I up still?

GAYNOR DAWSON: Do you want me to go through this list?
IAN RAY: As long as we can stand it.
GAYNOR DAWSON: Number two, you were looking for a conversion factor. It's going to be best when I give you the paper. Does he have a copy?
ERIC WAEHLING: No, but --
GAYNOR DAWSON: Basically you have centimeters per second.
IAN RAY: I agree with that, by the way. It's the right number. I've done it myself. Also in this geology conclusions here, the negative exponent operators here, like 10 to the minus six, that moves the decimal place over six places to the left.
GAYNOR DAWSON: Right.
IAN RAY: The velocity in that number, one million three hundred something is really quite high. When it's 10 to the minus 3, it's really quite high. It's like a thousand feet a year.
GAYNOR DAWSON: 10 to the minus three is considered a pretty productive aquifer.
IAN RAY: So you have water moving at a thousand feet a year.
GAYNOR DAWSON: That's right.
IAN RAY: If it's flowing out of Landfill 4 at a

thousand feet a year, that's only two years till it gets to the Troutdale aquifer. I wonder, is that true?
GAYNOR DAWSON: I'm not aware of anybody having measured a hydraulic conductivity out here of that. I would be highly suspect of that number because I've seen how long those holes out there in Landfill 4 hold water.
IAN RAY: How about then slug tests revealing 825 feet per year?
GAYNOR DAWSON: 825 feet per year is a whole lot less than a million feet per year.
IAN RAY: This is true. When you divide that into 2,000 feet, it's not very many years. 2,000 divided by 825 is what, three years?
GAYNOR DAWSON: But that's a conductivity number, right?
IAN RAY: It's a slug test.
GAYNOR DAWSON: Aren't they saying that's the conductivity they measured from the slug test? Remember what I told you before, that groundwater velocity --
IAN RAY: I'm sorry, it calls it groundwater velocity.
GAYNOR DAWSON: I'd have to look at what you're reading.
IAN RAY: That's what it says.
GAYNOR DAWSON: I understand. I need to put it in

context to answer your question.
IAN RAY: Okay.
GAYNOR DAWSON: Where are we? "Based on the slug test data, groundwater is estimated"... That's exactly right. All I can say is it goes right back to your earlier statement. What they've just measured is what's the velocity in this little area around that well.
To the extent that does not represent the 2,000 feet or the 10,000 feet you're worried about getting off-site, that water is of very limited value to you. As we move to a stage where we need to start making those calculations, absolutely need to look at something like a pump test, and it should be a 72-hour pump test, that's the only way to get a reliable over a big enough area to mean anything. It's a very preliminary number. That's all I can say.
I'll give you an example. If you and I were little tiny people and we're marching around in the mortar here, we'd look around and say this is pretty permeable. But we're too far away to realize it's really not very permeable at all. It's a matter of scale. Those slug tests are on a very small scale.
IAN RAY: These questions are really derived from the conclusions drawn by the company that made this investigation.
ERIC WAEHLING: URS's report.

GAYNOR DAWSON: I've not read the report.
ERIC WAEHLING: Gaynor may have seen it, but he didn't write it, just so you know. He's helping me out here to try to explain.
IAN RAY: I'll take my answers from Eric, as he has said, he has them in writing.
ERIC WAEHLING: That's fine. We can give them to you.
KAREN KINGSTON: I'd like number five answered.
ERIC WAEHLING: It's on the back page.
GAYNOR DAWSON: Weathered bedrock question?
KAREN KINGSTON: Yes.
GAYNOR DAWSON: Not having read the report, I have to assume what they're saying is they don't have enough wells properly spaced in the weathered bedrock to be able to draw the potential metric surface and say where water would flow.
ERIC WAEHLING: Actually, I had that discussion with URS. That's exactly what they're saying.
KAREN KINGSTON: Number two: Why are the users of the Troutdale aquifer not mentioned as potential human receptors?
GAYNOR DAWSON: I have to assume that's an oversight. Obviously, that is the key groundwater receptor, from my perspective. That's why we were so interested in trying to find it and locate it.

KAREN KINGSTON: Number three: How can Lacamas Creek be not considered a critical habitat since the surveys are incomplete and certain confirmed threatened or endangered plant species are found in Camp Bonneville?
ERIC WAEHLING: Ian, you have my only copy of the answers. I can try to answer. I'll hand you this and e-mail you the response, too, as well.
GAYNOR DAWSON: That's not a groundwater question.
CHRISTINE SUTHERLAND: Number three.
ERIC WAEHLING: Fish and Wildlife determines.
KAREN KINGSTON: Fish and Wildlife?
ERIC WAEHLING: They determine what is critical habitat. They define what meets the standard for critical habitat. By that definition, Lacamas Creek doesn't meet it. That doesn't mean it's not significant. It's very significant in that we want to make sure we're protective of it, but it doesn't meet the legal definition of critical habitat.
CHRISTINE SUTHERLAND: I have a question that I found on that. I wanted Ecology here to ask it. Can I just hold on to this page?
ERIC WAEHLING: Of course, you can. I'm not a Fish and Wildlife expert by any stretch.
CHRISTINE SUTHERLAND: Let me ask you this. I want to ask it again before Ecology. Ecology commented, made a recommendation, that since the dam blocks the passage of fish

over Lacamas Creek and appears to no longer be used, which is for logging, that Ecology may wish to require modification of the dam or petition the owner to remove it. In a response from you, you said the BEC will investigate and provide info. That's the part I have for you. But then I want to ask Ecology.
ERIC WAEHLING: I said that?
CHRISTINE SUTHERLAND: Yes.
ERIC WAEHLING: I'm not going to deny I said that. I'm not entirely sure how I can elucidate upon what the owner of that dam will do with it. I can tell you I went and looked at it. It's a big dam. It's not a Bonneville Dam, but it's more than just a berm.
CHRISTINE SUTHERLAND: Did you investigate to see the potential?
ERIC WAEHLING: I didn't, no. That's the truth, I didn't.
CHRISTINE SUTHERLAND: Are you going to?
ERIC WAEHLING: Into the potential of adding a fish ladder or something?
CHRISTINE SUTHERLAND: No. Ecology is looking at petitioning to remove it. That's the question I have for Ecology, which you can't answer that. I wanted to know why you responded that way?
ERIC WAEHLING: I'm not sure.

ED MARSH: If you bring that sergeant back down from Fort Lewis with his C4...
ERIC WAEHLING: They'd take care of it in a hurry. To be honest, Christine, if I responded that way, I'm not sure what I was thinking.
CHRISTINE SUTHERLAND: So you're not going to do it?
ERIC WAEHLING: I'm not sure what you're asking me to look into. The petitioning of the removal of the dam?
CHRISTINE SUTHERLAND: You were going to investigate and provide info back to Ecology. You responded that way.
ERIC WAEHLING: I'm not saying I didn't say that. I'm having a hard time recollecting exactly what I could look into.
CHRISTINE SUTHERLAND: I'll ask when Ecology is here and maybe they can recall.
ERIC WAEHLING: You might want to ask Chris. That sounds like something Chris -- I know he's particularly interested in things like that, Chris Maurer. You can ask anybody at Ecology. Sounds like something he might think of.
KAREN KINGSTON: Question over here?
IAN RAY: Are we going to get a cost of Landfill 4 ESI from start to today?
ERIC WAEHLING: Yes.
IAN RAY: How about will the RAB and community review the regulators' comments with Landfill 4 ESI final

comments?
ERIC WAEHLING: They're all incorporated in the documents. In the repositories, in the front of the document, is a matrix with all the comments and responses to the comments, in each one of those. This is one of the oversights missing from the repositories that we're correcting. Also we're going to include the copies of the original letters that we received. They're already there. They're represented. We're going to add copies of the original letters on letterhead.
KAREN KINGSTON: So the cost?
ERIC WAEHLING: The cost to date for the Landfill 4 expanded site investigation work, that's everything to date, it's approximately $1.3 million.
KAREN KINGSTON: Why don't you give the cost to date for Gaynor Dawson's company.
GAYNOR DAWSON: Eric has no idea because I actually work for the Pentagon. I'm free to Eric. Does not come out of the Bonneville budget. That's why he asked me to do so much.
KAREN KINGSTON: You do not come out of the Bonneville budget?
GAYNOR DAWSON: No. I'm funded directly through the Pentagon.
KAREN KINGSTON: How is that?

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GAYNOR DAWSON: Because the Pentagon is very interested in moving this along. My original job was really just to come out and look for some ways to help whisper in Eric's ear how he might go faster. Somewhere along the line, he convinced me I ought to actually do something. Because it's such a high priority for the Pentagon, they've agreed to allow us to take more of a hands-on role and do things that he can't get done faster.

KAREN KINGSTON: Interesting. Who do you report to?

GAYNOR DAWSON: I'm a subcontractor to a company called SMI, who reports to Mark Jones, the money man at the Pentagon's BRAC office.

ERIC WAEHLING: Do you want his phone number?

KAREN KINGSTON: Uh-huh.

GAYNOR DAWSON: I work on probably 10, 12 different bases around the country. If you're really anxious to hear numbers, I guess Mark could tell you what we get a year. Off the top of my head, I couldn't even tell you how much of that goes to Bonneville. I really don't know. I do whatever Eric asks me to do.

ERIC WAEHLING: Within reason.

KAREN KINGSTON: Mark Jones.

ERIC WAEHLING: His phone number is 703-695-9507. Do you want his e-mail?

KAREN KINGSTON: Okay.

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ERIC WAEHLING: It's Mark.Jones@HQDA.Army.Mil.
KAREN KINGSTON: Interesting.
GAYNOR DAWSON: It's HQDA.
CHRISTINE SUTHERLAND: I have a follow up. The reason why I asked that question about the comments is that if the dam is removed, then it could be deemed critical habitat by Ecology if it's removed.
ERIC WAEHLING: Okay.
CHRISTINE SUTHERLAND: I was following up with him. You talked about critical habitat. Here is a direct -- you can fill in the blanks.
KAREN KINGSTON: If the dam is removed, it becomes critical habitat.
ERIC WAEHLING: Ecology may petition to have it removed.
KAREN KINGSTON: I doubt it now.
CHRISTINE SUTHERLAND: It's in black and white. I didn't do anything new.
ERIC WAEHLING: I'll ask Ecology. I'm not sure if we'll --
KAREN KINGSTON: Did you look at residential wells to determine your site model? You said you did kind of a study.
GAYNOR DAWSON: There are no residential wells on the site. The conceptual model we put together was strictly

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for the Camp Bonneville site itself. We did not go off base at this point in time.

KAREN KINGSTON: Wouldn't that give you the well logs? The data from the well logs are so complete, wouldn't that give you, if anything, the counter-check to make sure?

GAYNOR DAWSON: It would tell us what's off-site. It won't tell us anything about what's on-site. My experience is private residential well logs are often very, very inaccurate because a lot of them are older wells. A lot of the drillers did not keep good wells in the days when a lot of these wells were drilled. A lot of times they don't exist. The terminology and everything else used is very difficult to equate to current monitoring well logs.

At this point in time we focused on what is within Camp Bonneville and how it will affect any plume we find on the camp and its ability to get off-site and cause problems off-site.

To the extent we have those kind of problems, you're absolutely right, the model has to be extended out into other areas. Until we have a notion that there's a problem out there, it's really not something you want to spend a lot of money on.

KAREN KINGSTON: I'm following.

ED MARSH: Did you do any sampling of the FBI's range, as well?

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ERIC WAEHLING: We sampled your well as part of the Landfill 4 investigation.
ED MARSH: Any problems?
ERIC WAEHLING: No.
JEROEN KOK: As long as you're not drinking the water.
GAYNOR DAWSON: They did find Jimmy Hoffa down there.
IAN RAY: You started out talking about inside-out and outside-in methods. If in the beginning four years ago we would have gone inside-out and just dug out Landfill 4, wouldn't all of this stuff be -- it wouldn't even have been done, we'd have removed the source of the contamination?
GAYNOR DAWSON: I'm not sure I understand exactly what you're saying. What I will tell you is, it was my recommendation to remove Landfill 4. I've been pushing very hard to get it done. We're trying real hard. Our problem, if we have one, is going to be getting through the safety board and everything else in a timely fashion.
ERIC WAEHLING: I think what Ian is asking, if we had gone in there and dug the thing out in the first place, would we have to be worrying about these discussions?
IAN RAY: Yes.
ERIC WAEHLING: I think the answer is yes. What had escaped over the 40-year history of that site would still be

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in the water and we'd still be having to ask these questions.
CHRISTINE SUTHERLAND: 40 years? It was there from '39.
ERIC WAEHLING: 60 years. Anyway, the long history. The stuff that's already in the groundwater would still be in the groundwater four years later or 60 years later. It's taken 60 years for whatever is there to get there.
KAREN KINGSTON: No, no, no.
ERIC WAEHLING: Maybe I'm misunderstanding the question.
GAYNOR DAWSON: The faster you remove the source, the better off you are, right. You're worried about what's in --
KAREN KINGSTON: You can't turn around and equate, "It's been there 60 years, it's only that far." You have to take the degrading of the contaminants that are in there, the munitions that are buried there.
GAYNOR DAWSON: The perchlorate does not degrade, cannot degrade.
KAREN KINGSTON: No, no, no, I'm talking about the munitions that are there are degrading. They're going to create more contamination as they degrade.
ERIC WAEHLING: That's not at all what I meant. All I meant was over 60 years, something was added to the groundwater. Even if we had removed it, it would still be in

the groundwater today. We'd still have to do these ongoing studies and putting wells in to define the edge of the plume. That was my only point. I wasn't trying to say --
KAREN KINGSTON: I wanted to make that clear. How are we doing, Ian?
IAN RAY: That's enough for me. If I could have these written answers.
ERIC WAEHLING: I'll e-mail them to you.
IAN RAY: I'll study them sometime when I want to take a nap.
JEROEN KOK: Can you e-mail those to everybody on the RAB?
ERIC WAEHLING: Everybody whose e-mail I have. Shall we adjourn?
KAREN KINGSTON: The Army's obligation to the community RAB, I'm not talking about the public, I'm talking about the community RAB, is to educate us, to bring us to speed so that we may advise. I'm disappointed that more of the community RAB members did not stay to glean something from this education process. But the ones that did, thank you very much. Thank you, Chuck, also for staying and listening. But I do feel it's the obligation of the Army to educate us.
ERIC WAEHLING: That's what we're trying to do here today.
KAREN KINGSTON: Good job.

ERIC WAEHLING: Thank you, Gaynor.
GAYNOR DAWSON: You're welcome.
ERIC WAEHLING: Anybody want to motion to adjourn?
JEROEN KOK: Motion to adjourn.
ERIC WAEHLING: Seconded?
IAN RAY: Second.
ERIC WAEHLING: Thank you very much.
(Meeting adjourned.)

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THE FOLLOWING ARE WRITTEN RESPONSES REQUESTED TO BE INSERTED INTO THE OFFICIAL RECORD. THE FIRST CONSISTS OF THE COUNTY Q&A, FOLLOWED BY RESPONSES BY GAYNOR DAWSON.

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COUNTY Q&A

Predetermined questions and clarifications fielded by county officials. Officials to include: Judie Stanton, Pete Capell, Bill Barron, Bronson Potter and Brian Vincent.
Question No. 1: What is the County's opinion of the environmental assessment - response to comments? Are you satisfied with it? This document was distributed by the Corps

of Engineers last month.
Response: The Army appears to have reviewed and answered the questions within the context of the EA. The responses appeared to be factual for the time frame in which it was developed, noting that the document is static. Several of the comments and questions are valid, however, and are more appropriately discussed when and if development of the site occurs. Many of the issues raised are being dealt with via the characterization of the site.
Question No. 2: Why did the engineering assessment and the cost analysis in November 1998 and April 1999 fail?
Response: The methodology for characterization of the site was based on statistics. The decision-makers for the respective "sides" could not reach consensus on a method.
Question No. 3: Are there parallels between then and the present situation, in terms of the characterization (or lack of) of the site?
Response: The present characterization is based upon the end reuse of the site. The reuse was created via a robust public process in 1997 and is accepted by both parties. Any differences in the acceptability of the characterization will be resolved via the cost negotiations. At present, Army, County and DOE appear to be finding an acceptable level of characterization.
Question No. 4: Can a valid cost analysis be

done... without knowing how much digging of "anomalies" and remediation of groundwater contamination there will be?
Response: No, a valid cost analysis cannot be done without knowing the extent of the work. That is exactly the basis behind the work currently underway. Once an agreed scope of work is developed, the cost negotiations will yield a transfer amount. Should more cleanup be required or the costs exceed what was transferred, either the Army will fund the increase or the insurance will. The Army remains the liable party for any cleanup required.
Question No. 5A: What length of term insurance is the County exploring?
Response: Long-term, if not in perpetuity, then at least 30 years.
Question No. 5B: What companies have you surveyed, names?
Response: It is premature to begin soliciting insurance carriers until we finalize the scope of the cleanup and the probable cost. We anticipate preliminary contact in late April or early May.
Question No. 5C: Please read the provision in any possible policy that would include coverage for human harm from military waste.
Response: Agreed.
Question No. 5D: Please read the provision covering

human or personal property injury due to UXO.
Response: Agreed.
Question No. 6: Does a future minor or major change in the land reuse alter or void insurance policies?
Response: Unknown. Would depend on the extent of the modification. It is the County's position that we have some flexibility in that regard. While we have performed planning, we would want the option of adjusting locations of items based on other constraints (i.e. wetlands, habitat issues, et cetera.)
Question No. 7: In the event the insurance company fails or drops coverage, can Clark County risk financial responsibility?
Response: County will not place itself to be in such a position. Also, Army is ultimately responsible for cleanup.
Question No. 8: Approximately how much will insurance cost? Who pays for it? Who decides how much to buy? Any public oversight here?
Response: Cost cannot be determined at this time. Cost of cleanup, level of controls, regulator "buy-in," et cetera, will all play in the "premium" the insurance company will charge. Army pays premium. Typically, the "coverage" is 100% over the cost of the cleanup. Appropriate professional will be engaged in the identification and selection of a

policy.
Question No. 9: Please discuss and clarify "split transfer."
Response: It is the County's preference that the site be transferred as a single entity. The only "split" we can envision is the 3,020 acres owned by the Army versus the 820 acres owned by the Washington Department of Natural Resources and currently leased by Army. We are exploring options that would enable a transfer of both parcels (total of 3,840 acres). There is no interest in either Army or County in any kind of a partial transfer of the 3,020 acres.
Question No. 10: How will Clark County protect our water?
Response: The County is committed to receiving a site that is either clean, in the process of being cleaned, or ensuring that it will be clean. Groundwater is a critical component and is being addressed through this process. The Washington DOE, Army and LRA are working together to detail the steps to adequately identify groundwater hazards and resultant remediation.
Question No. 11: Will you have "on-site" park rangers?
Response: Yes, the County envisions at least two full-time rangers, trained in UXO awareness identification and possibly remediation.

Question No. 12: What are the plans - long-term - for the FBI? Will you allow them to expand?
Response: The reuse plan has identified the FBI as a permitted activity. Their footprint on the site is limited to what they currently use. We know of no plans for the FBI to expand. At present, it is the County's position that they do not expand due to surrounding other reuse activities. However, if a need exists and a suitable locations and protections, et cetera, are workable, the possibility for expansion exists.
Question No. 13: Will local law enforcement play a larger role in the use? Will this be in conjunction with the FBI?
Response: The reuse plan identifies a location for a law enforcement training center adjacent to the FBI range. Ideally, some activities and space can be shared, thus minimizing each party's costs and impact to the site.
Question No. 14: Do we charge the FBI for their use? Will they be in charge when the park is closed?
Response: Subject to lease negotiations. The County will be in charge of the park.
Question No. 15: Will the County seek some acceptable statistical confidence level that the site characterization is accurate?
Response: The County has engaged the services of a

professional firm to conduct an independent assessment of the site characterization. Additionally, the Washington State Department of Ecology has an independent review underway, as well.

Question No. 16: When will the data be collected regarding the required "digging" and remediation - before or after ownership and commitment to manage cleanup?

Response: The data collection and identification of the cleanup effort is the basis for the transfer agreement under an early transfer. County is not obligated to clean up until all parties are in agreement, funds are transferred, insurance instruments are in place and the deed is transferred.

Question No. 17: According to the cleanup standard practice, when you hire a contractor for a particular job, you will receive from 5% to 15% as a commission. Where will that money go? What County department is the recipient?

Response: The County does not have the expertise or the in-house personnel to engage in the cleanup. The County, as a public body, cannot receive a commission in the context above. We will, however, have substantial management and oversight responsibilities of the contract we will issue and would expect that those costs are part of our overall transfer cost of the site.

Question No. 18: What will you do about

trespassers?
Response: We have not fully investigated this issue, but plan to have a security plan in place at the time of transfer. However, adequate warning signage will certainly be posted around the site warning of previous usage of the site. Any trespassing will be dealt with in a similar manner to any other regional park.
Question No. 19: What do you propose to mitigate public safety on the hiking trails?
Response: Options are currently being explored. Certainly, full clean up of the trail and surrounding "buffer zone" and warning signage.
Question No. 20: Will you consider a veterans war memorial or cemetery in the reuse?
Response: The reuse activity selection for this site went through a rigorous public process. Cemetery and a veterans memorial were not selected. Any future uses for the park not currently identified may need to go through a similar rigorous public review and selection process.
Question No. 21: Will you test the wildlife for contamination levels in their blood?
Response: The County has no plan to test wildlife, as our understanding is that the animal would need to be destroyed to identify with any certainty of any contaminations. Of course, if there is a reasonable suspicion

of a direct relationship to wildlife health and a suspected source, some investigation would be prudent.

Question No. 22: Regarding timber revenue, current UXO cleanup technology and the timber valuation on your website assumes clear-cutting as a best-case scenario. Your valuation was done in 1997 with a 5% gross profit reduction due to lead and shrapnel in the timber. You claim your gross profit for the logging will be $12,762,000, and the net profit will be $6,125,000. Where do you stand on this today? Have you conferred with the Department of Ecology? Have timber cruisers reviewed current UXO data? Was your valuation done by a logging company certified to cut in UXO areas?

Response: The timber revenue identified above is not the "preferred alternative." While clear-cutting was an opinion explored, the environmental impact was not consistent with the County's desired end state. The 1997 revenue projection for our preferred alternative of selective thinning showed a net yield of $200,000/year. While a timber professional performed the work, the County recognizes that UXO timber harvest is a special case and will be exploring a more refined investigation of realistic revenue projections.

Question No. 23: Will Clark County set aside special money for an "in case" or "bad faith"?

Response: The need for this should be negated or minimized via the insurance and/or the Army's ultimate

responsibility. It is, however, a risk, not unlike other risks the County must weigh. For that purpose, the County maintains a risk fund.

Question No. 24: The Center for the Public Environmental Oversight just published their $90 million club. Their data is compiled using the 2001 DERP Report. Camp Bonneville made the list this year. Using DoD figures, 126 current and former facilities will cost a total of more than $90 million each to clean or otherwise address hazardous waste contamination. The figures project $91,319,000 for Camp Bonneville. Will you get at least this much money?

Response: Without knowing the basis for how this figure was arrived at, it should be viewed with scrutiny. It is highly doubtful the cleanup costs will approach this amount. The cost of the cleanup will soon be under negotiation. Until we can perform an independent cost estimate of this cleanup (based on any agreed level of cleanup), it is not prudent to be issuing a projection of cost.

Question No. 25: How much money is available in the BRAC budgets for fiscal 2003 and 2004? How much has the Army offered as an incentive for the early transfer?

Response: Army has advised that their entire (Department of Army wide) BRAC budget for FY03 is $250 million. The FY04 budget goes to $75 million - $80 million,

and the FY06 goes down to $30 million. What this illustrates is that there will be little funding available in future years to ensure cleanup of the site. Thus, the incentive for early transfer. Once an appropriate $$ transfer amount is negotiated, part of the $250 million is transferred to an account available only for cleanup of Camp Bonneville.

Question No. 26: Is your early transfer money based on a previous fiscal year?

Response: Early transfer money is based on FY03.

Question No. 27: Will you insist upon a RAB-type community oversight committee when you are in ownership during your cleanup?

Response: The County recognizes the value of our constituents and is planning for some type of advisory board for the Camp Bonneville site.

Question No. 28: Do you have an administrative record, a counterpart, or something like it? Where is it kept?

Response: The County at present does not have an administrative record, as we have no ownership or privity of information for the site. We do, however, have many (if not all) the documents that the Army has developed in their research. In addition, we have documents prepared for the reuse process, as posted on the Camp Bonneville website.

Question No. 29: The LRA gathered its facts from

1994-1997 for 70% of its conclusions. Now that the LRA consists primarily of our three Commissioners, what have you done to add addendums and continuing statistical data to update the Reuse Plan? If so, where can these documents be viewed?

Response: The Reuse Plan was the result of intensive research and public process. There is no plan to alter the Reuse Plan. County is, however, updating cost estimates and revenue projections that were part of that plan (inclusive of annexes).

Question No. 30: Who has been and who will be paying the County attorney for their work on Camp Bonneville? What fund or account?

Response: County staff is paid out of the respective department budgets. These costs are being tracked and reimbursement will be requested of the Army.

Question No. 31: How much has the County received, thus far, in grant money with regard to restoration of Camp Bonneville and consideration for ownership?

Response: The County received a grant in 1997 from the Office of Economic Adjustment to develop the Reuse Plan. Our records reflect that grant was on the order of $125,000. In addition, the LRA will be seeking additional grant funds of up to $100,000 from the Office of Economic Adjustment for a refined and updated economic analysis of the Reuse Plan.

Question No. 32: Will you enlarge the roads to the gates during cleanup?

Response: Road design is a result of function and safety. It is premature to assess the need to improve these roads until we know the extent of the cleanup, the schedule of the cleanup, and the necessary equipment. It is highly possible that the roads as present are adequate for the cleanup effort.

Question No. 33: Six children have been killed at closed transferred bases by the same kind of shells that we have at Camp Bonneville. Will you put up eight-foot fences and provide Guard sentries to protect our children?

Response: The issue is rightfully at the forefront of everyone involved with the issue. This issue is central to what constitutes an "appropriate" level of cleanup or what protections are in place. A fence of this style may be an appropriate device in certain areas. County staff are not only public servants, but are residents of the County, and probable users of the site. The security plan will include appropriate measures to protect human and environmental health, in direct relation to the potential hazards which may be encountered on the site before, during and after cleanup.

Note: The responses to these questions are based on the best available information (to Clark County) as of 12 MAR 03. Some responses are subject to change as additional

information becomes available.

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GAYNOR DAWSON Q&A

Landfill 4 ESI Draft Final, Section 7.1 Conclusions.
Question No. 1: Clarify "hydraulic conductivity" and "groundwater velocity" as the same or different?
Response: Hydraulic conductivity is different than groundwater velocity. Groundwater velocity represents the rate at which water flows through an aquifer or permeable medium. Hydraulic conductivity is a parameter describing the rate at which water can move through an aquifer or permeable medium and is dependent on the properties of both the soil or rock and the fluid. In simplified form, hydraulic conductivity times porosity times hydraulic gradient equals groundwater velocity.
Question No. 2: Provide conversion factor from CM/SEC to FT/year - and put all results in FT/year.
Response: To convert from CM/SEC to FT/year, multiply by 1,035,484.
Question No. 3: Clarify "overburden wells," published value of "similar materials," and the logic of "probably not applicable."

Response: Overburden wells are the shallow wells screened within the clayey-silty soils. Groundwater and geotechnical engineering textbooks usually include a table of published ranges of values of hydraulic conductivity for different soil types. These tables are a compendium of results from tens to hundreds of professional papers and reports and are considered to be good average values. It doesn't matter where the samples were taken since a soil classified as a silt in Washington will end up giving a similar hydraulic conductivity as a silt in, say, New York. For example, C.W. Fetter (Applied Hydrogeology, 2nd Edition, 1988) lists a range of hydraulic conductivity values for clay of 0.000001 to 0.000000001 CM/SEC; and for silt, sandy silts, clayey sands and glacial till (all combined) a range of 0.0001 to 0.000001 CM/SEC.
The author of another text may have slightly different MAX/MIN values because he may look at different professional papers to compile his table.
Logic of stating groundwater velocities derived from hydraulic conductivities (which themselves were calculated based on slug tests) from overburden wells are probably not applicable because the hydraulic conductivities calculated from slug tests were generally much higher than published values for similar soil types and were also much higher than other site-specific hydraulic conductivity calculated from

recharge test analysis from wells L4-MW01A and L4-MW05A. The slug-water response in overburden wells may not represent change associated with the "aquifer" or saturated soil but may be an artifact of the sand filter pack placed around the well screen during construction.

Question No. 4: Clarify "Bouwer and Rice method."

Response: Bouwer and Rice method is a method of slug test analysis that is most applicable to unconfined aquifers or unconfined groundwater conditions. Overburden wells are unconfined, hence Bouwer and Rice method applies. Weathered bedrock wells exhibit some indications of being confined, not unconfined, hence the assumptions built into the Bouwer and Rice equation do not hold.

Question No. 5: Clarify why "regional groundwater flow direction within the weathered bedrock is unknown."

Response: There are four weathered bedrock wells at the site, providing some degree of certainty on localized weathered bedrock flow at the site. However, there are no wells off-site on more of a regional scale and verifiably located within the same weathered bedrock unit to say with certainty the direction of groundwater flow in the weathered bedrock. It is believed that groundwater within the weathered bedrock mimics topography, as does the overburden groundwater, and that regional weathered bedrock flow is from higher topographic elevation to lower topographic elevation region,

which is from the northeast to southwest.
Section 7.3 Conceptual Site Model.
Question No. 1: Why is leaching into weathered bedrock not mentioned as a chemical release mechanism to the environment?
Response: Since overburden lies on top of weathered bedrock, leaching from the source would enter the overburden and not bedrock. Certainly contaminants are in weathered bedrock, however, they are transported there from the overburden soils via contaminant infiltration to groundwater.
Question No. 2: Why are users of the Troutdale aquifer not mentioned as potential human receptors?
Response: Although "Troutdale" was not specifically mentioned, it was implied in the statement "Potential human receptors include... current and future off-site residents... potentially exposed primarily by ingestion of groundwater or surface water."
Question No. 3: How can Lacamas Creek be NOT considered a critical habitat since the surveys are incomplete (Endangered species Survey, PENTEC 1995) and certain confirmed threatened or endangered plant species are found in Camp Bonneville?
Response: Critical habitat is a legal designation by the US Fish and Wildlife Service (FWS). While FWS is supposed to designate critical habitat for all listed species,

in fact the process is quite onerous, and only about 10% of all listed species have received critical habitat designation. FWS has not designated critical habitat for any species at Camp Bonneville. That is not to say, that in general terms, the environment surrounding the location of a listed species is not critical to its survival. The statement in the document solely refers to FWS official designation (there is none).

Figure 3-3 - Does the Pt Troutdale formation extend northeastward under the Qa alluvium?

Response: Based on how the Troutdale is drawn in Figure 3-3 (interpretation from Shannon & Wilson, 1999), the Troutdale pinches out completely underneath the Camp Bonneville cantonment area and does not extend northeastward under the Qa alluvium. The only deep well to the northeast of this cantonment rather is the cantonment area supply well, and there is no definitive indication the Troutdale is present at that location.

Figure 3-4 - Why does the figure show the area of the landfill considerably smaller than walking the site reveals - bulldozer pilings westward and objects sticking out of the ground?

Response: Limits of landfill shown on Figure 3-4 are as accurate as possible and are based on field observations, topographic survey and analysis, and ground

penetrating radar survey, which "sees" boundaries of disturbed soil below the surface. We realize landfill bounds may need to be adjusted if they are found to be something different.

Question: Will the RAB and the community review the regulators' comments about the Landfill 4 ESI Draft Final?

Response: Regulator' comments and the Army's response will be included in the Final Report.

Question: What was the cost of Landfill 4 ESI from start to today?

(No response listed.)

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End of inserted text.

CERTIFICATE

STATE OF WASHINGTON)
) ss.
County of Clark)

I, Jaime S. Morrocco, a Notary Public for Washington, certify that the Camp Bonneville Restoration Advisory Board Meeting here occurred at the time and place set forth in the caption hereof; that at said time and place I reported in Stenotype all proceedings had in the foregoing matter; that thereafter my notes were reduced to typewriting under my direction; and the foregoing transcript, pages 2 to 70 both inclusive, contains a full, true and correct record of all such testimony adduced and oral proceedings had and of the whole thereof.

I further advise you that as a matter of firm policy, the Stenographic notes of this transcript will be destroyed two years from the date appearing on this Certificate unless notice is received otherwise from any party or counsel hereto on or before said date;

Witness my hand and notarial seal at Vancouver, Washington, this 14th day of April 2003.

Jaime S. Morrocco, RPR, CM
Notary Public for Washington